Development in Medical Science in India during Sultanate and Mughal Periods

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CERTIFICATE

Certified that **Ms. Suboh Aziz Natnoo** who was registered as Ph.D. scholar in the Department of History, University of Jammu has completed her work under my supervision. The title of her thesis is **“Development in Medical Science in India during Sultanate and Mughal Periods”.**

The work is original and worthy of consideration for Ph.D. Degree in History. She has fulfilled all the statutory requirements for submission of the thesis for evaluation.

It is further certified that:

- The thesis embodies the work of the candidate herself;
- The candidate has worked under my supervision for the period required under rules;
- The candidate has put in the required attendance in the department during the period of research;
- The conduct of the candidate remained outstanding during the period of research; and
- The candidate has fulfilled the statutory conditions as laid down in Section 18.

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INTRODUCTION

Introduction:

History of medical science is the history of mankind and his attempt to promote health, to relieve sickness and suffering, and also preventing spread of illness and disease. It is the story of the ongoing evolution of the practice or science of the diagnosis, treatment, and prevention of diseases. Every culture had developed a system of medicine and medical history is one of the aspects of history of culture. Human progress and medicine are inseparable.

History of medical science in India begins in ancient period which is recorded by texts such as *Charaka Samhita*, *Susruta Samhita* etc. *Charaka Samhita* was considered best of all the literature on medicine. The main focus of this work is on classification of medicines which were derived from different sources like plants, animals and minerals. Similarly in *Susruta Samhita* different types of surgical operations and various instruments used and methods of surgery are discussed. During Sultanate and Mughal period, medical science was developed through two processes.

1) Immigration of historians, Sufis and merchants who themselves had knowledge of the medicines of their own areas.

2) Royal patronage to medical science i.e. Unani and Ayurvedic by the ruling class. In India also before the advent of Unani system of medicine there were two other prominent systems already existing in India and those were Ayurveda and Siddha systems. Taking into consideration the coming of Unani medicine in India, the exchange of ideas between the indigenous system and the Unani medical systems, the court patronage which the different medical systems got and the existence of non-rational methods of treatment running side by side with these systems, the research work entitled "Development of Medical Science in India during Sultanate and Mughal periods" has been divided into five chapters.

The first chapter "*Indigenous medical system and Unani medical system*" throws light on the advent of Unani medicine in India and also on prevalent systems of medicine at that time. The basic philosophies of these systems are mentioned and the

popularization of Unani medicine is also discussed. The exchange of ideas between indigenous and Unani medical systems are also taken into account.

The second chapter that is “*Superstitions and Myths related to diseases and their cure*” deals with the prevalence idea of myths and superstitions as cause of different types of diseases like belief in evil eye, witchcraft etc. and also the adoption of these irrational practices to cure diseases like visiting graves of *Sufi* saints, martyrs and *Walis*, beliefs in charms, amulets, talisman etc. Regional variations in the practice of these irrational practices are also discussed.

In the third chapter that is “*Alchemy and its relation with medical science*” the concept and philosophy of alchemy is discussed. This chapter throws light on the origin and development of Alchemy in India, its benefits and use in preparing medicines. In this chapter some famous alchemists and their works are also discussed. This chapter also highlights how *Rasayana* gave rise to the science of metallurgy.

The fourth chapter that is “*Nature of diseases, their cure and sources of medicine*” deals with different types of diseases prevalent in medieval India and how they were cured by using different types of medicines which were prepared from different sources like plants, animals and minerals. It also throws light on diseases which got cured on its own without the use of medicaments.

The last chapter that is “*Political Patronage to medical science under Delhi Sultans and Mughal emperors*” deals with the policies of rulers of successive dynasties of medieval India in promoting medical science. These policies could be seen in the form of opening of madrassas, hospitals medical libraries etc. It also mentions about the patronage that the hakeems got in the form of rewards for their service. Not only professional hakeems, but those who were having knowledge of medicines and worked for the welfare of society were also patronized by the ruling class.

The present study is based on both Primary and Modern works. Primary works such as *Alberuni’s India* of Alberuni provides information about Indian concept of medical science and their modes of treatment. It also deals with myths and superstitions existing in Indian society and popular beliefs. Afif’s *Tarikh- i-Firozshahi* reveals the

interest of ruling class in therapeutics and court patronage to the development of medical science. *Sirat- i- Firozshahi* highlights the cure of different diseases and like *Tarikh-i-Firozshahi* it also provides information about the court patronage to medical science. *Baburnama*, Abul Fazl's *Ain-i-Akbari*, Badauni's *Muntakhabut- Twarikh* and *Tuzuk-i-Jahangiri* provide information about utility of different plants and their products in terms of their medicinal value. *Tuzuk-i-Jahangiri* also provides information about the sense of enquiry of ruling class in the field of medical science as can be seen from Jahangir's interest in knowing the anatomy of different animals. Some traveller accounts like Bernier's *Travels in Mogal Empire* is useful in study of different types of diseases prevalent in Mughal India and how Indian methods of treatment differed from Europe. The account of Tavernier also provides information about Indian medical concept and different sources of medicine. It also highlights the expertise of some common people besides professionals in healing art. Manucci's account of Mughal Empire entitled *Storio do Mogur* deals with different customs and ideas like religious practices, myths and beliefs prevalent in Indian society in 17th century. Different modes therapeutics is described. He also lays emphasis on the concept of surgical practice in India

Since medical science was one of the integral aspects of socio-political and intellectual aspects of the Sultanate and Mughal period, a number modern historians dealing with the social economic, and administrative history of medieval India make medical science as a sub-theme of their work .Some of the authers such as O.P Jaggi and A.Rehman have exclusively dealt with the history of medical science of medieval India, whereas; K.M Ashraf, R.C Jauhri, Agha Mehdi Hussain, P.N Chopra, B.N Puri and M.N Das, Tapan Raychaudhuri and Irfan Habib have worked on a particular aspect of medical science.

O.P Jaggi's, *History of science and technology in medieval India*, vol 8, "*Medicine in medieval India"* deals with the history of Unani medicine: its beginning and the basis, it's coming into India with the early Arab conquerors, its physicians and manuscripts and its adaptation to the Indian Milieu. His findings show that Unani system of medicine was brought into India by early Arab conquerors. Along with them, came their physicians and others who practiced different healing arts. It provides and an

account of the physicians and their activities starting from the Khiljis, particularly under Alauddin Khilji and his successors. Under the Mughals Unani medical system was very much encouraged. For Jaggi Akbar's period was an age of flourishment of the Unani medical system because of political stability, liberal state policies, and encouragement to learning. Scholars flooded the Mughal court and made Delhi one of the most eminent centers of the medical facilities of the 16th century.

Another work of O.P Jaggi, *Science and technology in India*, vol 7, *Science and technology in Medieval India* deals with the study of Science and Technology in relation to its social, cultural, political and economic environment prevailing at that time. It throws light on the fact that in medieval India, there was adequate knowledge of applied technology and industry to meet the people's own needs. In addition, the surplus products of industry were exported to the neighboring countries, even to far off Europe. The balance of trade always remained in favour of India. In later medieval period, however, India did not keep pace with the development in the western world. While western Nations forged a head shedding most of their ancient and medieval inhabitations, the same did not happen in case of India. Why it did not happen in India is the most important aspect covered in this book. This volume intends to give a comprehensive picture of the developments in the field of science and Technology in India. His findings show that in the madrassas during that time laid special emphasis on the study of medicine besides other subjects. Also the madrasas supplied state with suitable candidates for the posts of *Qazis*, muftis, administrators and professionals. It is also mentioned that during Tughluq rule in India, there were one thousands educational institutions and 70 hospitals in Delhi alone.

The changing interaction between different philosophical and religious movements in general and science and technology in particular, emphasizing on the impact of Bhakti and Sufi Marg on scientific development, in the country has been covered by A.Rehman's, *History of science, philosophy and culture in Indian civilization*. It is an excellent bouquet of learned papers on the history of science of India Spanning from 11th to 18th century, from the effective presence of Delhi Sultans and Mughals in North India to the establishment of British rule in East India. The volume presents the

highly theoretical ideas of space, time and mathematics and practical aspects of life like rituals, agriculture and food. It provides information about the two major systems of medicine prevalent in India before the advent of Unani medicine i.e Ayurveda and Siddha. It also throws light on the origin of Indian chemistry and the rise of alchemy. The preparation of medicine has also been discussed, like the use of metals, minerals and plants in the preparation of medicine.

Another work edited by Deepak Kumar that is *Disease and Medicine in India* is a collection of papers by some eminent historians that deals exclusively with the history of health conditions and the progress of medicine in India from Harappa to modern period. The practice of surgery has been discussed in detail. The prevalence of some diseases like Smallpox, malaria and cholera are discussed along with the therapeutic measures and prophylaxis in order to subside their effects. The introduction of spectacles in India and the Indian response to Western medicine is also given. It also throws light on the profession of physicians and the patronage they got from the ruling class.

Seema Alavi's book *Islam and Healing* throws light on the advent of Unani medicine and its development in India. This book tries to show the interaction of this medical tradition with Indian society and politics. It also reveals how the established medical practitioners kept their system of medicine alive when the colonialism was on its peak. It throws light on the cultural exchange between Arabs and Indians in terms of knowledge of medical science. It was not only Hindustani *vaids* who were invited to Baghdad but they also sent their agents to collect information about Indian plants and herbs. It also throws light on the belief of theologians in the irrational modes of treatment and thus their conflict with the rational modes of treatment. The patronage given to medical practitioners is also discussed.

The interplay of political, economic and social forces which contributed to the shaping of society during the Medieval India is revealed by K.M Ashraf's work *Life and conditions of people of Hindustan*. His findings show that among skilled professions, that of the physician was fairly well established in all big towns and cities of the Hindustan. Medical herbs, spices and fragrant wood were grown in large quantities and found the market in and outside India. Certain medical herbs used as antidotes for poison and for

snake bites were grown in the country. Drugging has also been mentioned, which, however prevailed on small scale. While discussing the practice of drugging, use of Opium has been mentioned and also use of the poison to counteract the effect of poison. He has also stated that idea of personal hygiene was influenced by the religious beliefs.

Different authors have mentioned about the policies of ruling elite in Medieval India towards the promotion of medical science. The political patronage provided by Firoz shah tughlaq towards the promotion of medical science is revealed by R.C Jauhri's *Firoz Shah Tughlaq*. It not only embraces the political history but also administration, economic conditions and cultural aspect of Firoz's reign. R.C Jauhri's findings show that Firoz Shah Tughlaq adopted different public welfare policies. One of the important public welfare policies adopted by the Firoz Shah Tughlaq was the establishment of the *Dar-ul-shafa* (hospital) .The auther mentions that Sultan attached great importance to the *Karkhanas*. Sultan maintained 36 *Karkhanas* and tried his utmost to collect raw materials for them. One of the *Karkhanas* was *Daroodar Khana* (Medicine Store). The Poor obtained free medicines and health of the thousands of the patients was restored. The number of the diseases prevalent at that time has also been mentioned. Patent prescriptions, simple and compound medicines for such diseases were provided in the *Dar-ul- shafa* . For the maintenance of the *Dar-ul-Shafa* rich and flourishing villages were given in endowment by the Sultan. Firoz shah was exceedingly fond of History, astronomy, natural sciences and medicine.

The story of the rise, establishment, and fall of the house of Tugluqs is narrated in Agha Mehdi's *Tughluq dynasty*. The Tughluq dynasty tells us the story of the Mongol tide and its reflux which had drowned, about a hundred years before the rise of Tughluq power. It includes the history of Giyasuddin Tughluq and his son Sultan Mohammed and also age of Firoz Shah and his successors. The Tughluq dynesty builds a comparison between Sultan Mohammed and his cousin and successor Sultan Firoz Shah. Agha Mehdi's findings show that Mohammed Tughluq studied medicine and attended the sick. He mentions that slaves were the keepers of medicine. Like marriage bureau worked also a hospital with pharmacy and a dispensary where in a large number of learned and expert physicians were employed and each physicians had a staff of assistants and

hospital attendants under him. There used to be a public announcer (*Chaush*) who made announcement for inviting patients to take advantage of state aid.

A proper evaluation of the Indian way of the life in all its aspects and in different periods has been made in P.N Chopra,B.N Puri and M.N Das's work, *A Social and cultural and economic history of India*. It is an attempt to portray Indian culture through the ages in all its aspects--- political organization, social life, economic conditions, education and literature and art and architecture. The study is made in the frame work of the usual chronological division into ancient, medieval and modern. Mention has been made about some well-known physicians and astronomers like Maulana Hamid–ud-din Mutraz and Aziz –ud-din. Mahachandra was renowned physician while Jaja was an eminent surgeon. A number of scholarly works written on medicine are also mentioned. It has also been stated that Mohammad Tughlaq took great interest in diseases of animals. Also information is given about the skillful *Jarrahs* or surgeons who not only performed operations but could also provide artificial limbs.

A comprehensive view of the economic life during Sultanate & Mughal Period is provided by Tapan Raychaudhuri and Irfan Habib's work, *The Cambridge economic history of India*. It throws light on the organization of rural economy, agriculture and manufactures, techniques of production and commodities produced etc. It also gives information about the agrarian relations, land revenue and non-agricultural production. Information about prices & wages, monetary system, currency, trade and commerce is also given. Both inland and foreign trades are discussed. Towns and cities, standard of living in Mughal India are also discussed. It is also gives a glimpse of South Indian society, polity and economy. While discussing the maritime trade during the sultanate period, different items of export are discussed. Among these were spices and aromatics, dyeing and varnishing plants and medicinal herbs. It is mentioned in their work that the physicians were patronized by the Mughal Emperors like poets, scholars, artists, Musicians and calligraphists. During the Mughal period there was long distance over land and aver sea commerce in Opium as well as Indigo and silk as these were produced on large scale. There is mention of popular intoxicant *Arak* (*Araq*) made from rice, molasses, mahuwa or toddy. Tobacco was important commercial crop brought by Portuguese

during Akbar's reign. Opium was an established manufacture in Malwa and Bihar, and was the production of alcoholic drinks from toddy sap, mahuwa and molasses is many parts of India. Among the successful professions, that of physician was well established. Established physicians and extensive medical profession including trained men (*Mutatabbib*, *Hakims*, and *vaids*) as well as quacks (*na-Tabib*) are mentioned.

Most of the modern works consulted focus on indigenous medical systems and the advent of Unani medicine in India. They also emphasize on court patronage to the development of medical science in terms of establishment of hospitals and rewarding the hakims. They mostly deal with the professional hakims who were associated with the court. The present work is an attempt to study the exchange of ideas between the Indian systems of medicine and the Unani medical system. There is a focus on different types of diseases and therapeutics. Concept of therapies involving nonscientific practices is also discussed. The sources of medicines for treating different ailments in medieval times and their present medicinal value are also focused on. The practice of alchemy for preparing medicines is also taken into account. The research work also lays emphasis on involvement of some common people besides professional hakims in art of healing ailments.

CHAPTER – 1

Chapter-1

Indigenous medical system and Unani medical system in India

History of medical science can be dated back to the history of evolution of a civilization. Medical science prospered in all ancient civilizations. In India the beginning of practical knowledge of medicine can be traced from the hymns of *Atharvaveda* in ancient times. In ancient India the codified medical practice was in the hands of brahmans who were considered to monopolize all knowledge according to the law book of Manu, which was the guide for the proper conduct of Brahmans and it was only the Brahmans who had right to learn *Vedas*. So the codified medical theory was in the hands of Brahman priests and scholars but their medical practice was bounded by rituals. Many significant additions were made to practical medicine during Brahmanical dominance. In spite of the custodians of knowledge they had a strong disgust for medical practice in ancient India. This might be because of certain restrictions imposed by the law books which were difficult to overcome while practicing medicine. For example; the law book of Manu prohibited the contact with dead bodies, and for that reason if anybody touched them had to undergo ritual purification. The codification took place in order to avoid any palpable conflict and a religious tinge was imparted to the scientific knowledge. Thus they gave it a religious origin and conservative form. The brahmans denounced the physicians and their methodology of medical science as they (brahmans) thought their scientific outlook to be a challenge to the scriptural declarations. The codified medical practice came to be called as Ayurveda. In Ayurveda there was a transition in therapeutics from association with religion and magic to a more rational and scientific method of treatment[1]. It can be seen in the entire legal literature from the Christian era up to the period of Manu that there was intense contempt for the medical practitioners as is evident from the law codes of the earliest group of law-givers represented by Apastamba, Gautama and Vasistha. The doctors were considered highly impure. Gautam's law code indicated that a brahman may not accept food from an artisan, a criminal, a surgeon and such other persons. In the *Manu Smriti* , presence of physicians and crafts man was said

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[1] Poonam Bala, *Imperialism and Medicine in Bengal: A socio-historical perspective*, New Delhi, 1991, pp. 24, 25.

to destroy the sanctity of sacrifice and for that reason surgeons were not allowed at sacrificial ceremonies . While on the one hand religious orthodoxy disfavoured practice of medicine by physicians, but on the other hand the rise of two other religions i.e. Buddhism and Jainism became a challange to the Brahmanical ideology as the Buddhists questioned the authority of Vedas and challenged the validity of the law givers. The increasing acceptance and popularity of Buddhism favoured the spread of reputation of Ayurveda with the help of Buddhist missionaries. During Buddhist period the medical profession appears to have been valued the most among all the professions. This is evidenced from the frequent appreciation of the physician Jivaka wherever mentioned in the ancient texts. Buddha himself was interested in the science of medicine. This is revealed from various texts comprising *Vinaya Pitaka*, a collection of rules for Buddhist order. One of these texts is *Mahavagga* describes various therapeutic measures and provides an important guide to the history of medicine[2]. The science of medicine thus got a boost during Buddhist period. Medical courses formed a part of curriculum at Nalanda, Taksila and Varanasi which were the famous Buddhist centres of education. There were veterinary departments where medicines etc. were available for treating animals. Buddhist texts mention about Nagarjuna who was much skilled in the art of preparing different kinds of medicine. He is also said to have discovered the process of distillation and a method of converting mild alkali to be used as disinfectant which was not known in Europe till 11th century and was the first to prescribe mercury as an internal medicine[3].

The two major systems of medicine prevalent in India before the advent of Unani medicine were Ayurveda and Siddha systems. Both Ayurveda and Siddha system were basically philosophical systems apart from treating the patients[4].

Ayurveda:

Ayurveda was one of the specialized branches of Vedic studies[5]. In the practice of ancient Indian medicine there evolved two schools one introduced by Dhanvantri and

2 Ibid. 29,30, 31.
3 P.N Chopra, India- *An Encyclopaedic Survey*, New Delhi, 1984, pp. 206, 207.
4 D.P Chattopadhyaya, *History of Science Philosophy and Culture in Indian Civilization*, Vol3, Part 1, *History of science philosophy and Culture*, ed. A.Rehman, New Delhi, 2007, p.18.
5 Op.cit. P.N Chopra, pp. 206, 207.

other by Atreya[6]. The beginning of Ayurveda is traditionally associated with Varanasi as it is here that Dhanvantri (the presiding deity of the science of Ayurveda) is said to have imparted the knowledge and skill of surgery to Susruta. Charaka who was associated with the school of Atreya wrote *Charaka Samhita* based on the teachings of Atreya whose date is assigned to 6th c B.C[7]. Before Susruta and Agnibhesha[8]Ayurveda was taught verbally because until then no script was discovered. Agnibhesha wrote *Agnibhesha Samhita*. Charaka was his teacher[9].

Ayururveda in general means '*the science of life* 'and has eight divisions or limbs (ashtangas). These are: 1) *salya* (surgery) 2) *salakya* (ENT and opthalmology) 3) *kaya-cikitsa* (internal medicine) 4) *bhuta-vidya* (demonology/ Psychology) 5) *kaumarabhrtya* (pediatrics) 6) *aganda* (toxicology) 7) *Rasayana* (rejuvenation) 8)*vajikarana* (virilification)[10]. The science of dietetics was also a part of Ayurveda. The first major works of Ayurveda which were extensively used were *Charaka Samhita*[11], *Susruta Samhita*[12], *Bhela Samhita*[13]and *Sharagadhara samhita*[14]. Alberuni writes that the *Charaka Samhita* was considered as the best of their whole literature on medicine[15]. Bernier has also written that Indians were having a number of small books and calls them collection of recipes and further writes that the most ancient and most esteemed was in verses. Also Bernier writes that the mode of their treatment was quite different from Europeans and further says "their practice was based on following acknowledged principles: a patient with a fever requires no diet, the sovereign remedy for sickness is abstinence, nothing is worse for a sick body than meat broth, for it soon corrupts in the

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6 Asoke.K.Bagchi, *Medicine in medieval India,* Delhi, 1997, p.29.

7 Op.cit. P.N Chopra, pp. 206, 207.

8 Agnibhesha , a legendry rishi considered to be one of the earliest writers of Ayurveda.

9 Op.cit. Ashoke.KBagchi, p.29.

10 B.V Subbarayappa, *India's contribution to history of science in India's Contribution to world thought and culture*, ed. Lokesh Chandra et al, Madras, 1970, p. 54.

11 *Charaka Samhita* is the earliest codified text on Ayurveda written by Charaka. It primarily deals with medicine.

12 The *Sushruta Samhita* is an important Classical Sanskrit text on medicine written by Sushruta. It primarily deals with different aspects of fundamental principles and theory of surgery

13 *Bhela Samhita* written by Bhelacarya is one of the oldest Ayurvedic Samhita.

14 D.P Chattopadhyaya, History of science, philosophy and culture in Indian civilization vol.3, Part 1, New Delhi, 2007, p.16. *Sharangadhara Samhitha* is epitome of Ayurvedic literature of medieval India. The author is Sharangadhara.

15 Abu- al-Rayḥ anMuḥ ammad, (Alberuni), *Alberuni'sIndia*,Eng.Trans,by Edward Sachau, Vol 1, New Delhi, 1964,p.158.

stomach of one afflicted with fever, a patient should be bled only on extra-ordinary occasions, and where the necessity is most obvious as when there is reason to apprehend brain fever or when an inflammation of chest, liver, or kidney has taken place". The Mughal physicians also adopted them especially in regard to abstinence from meat broth. Bernier also writes that Indians know nothing about anatomy[16].

The object of Ayurveda was to assist nature by supporting its processes broadly in a threefold way: Anna or strict dieting was major aspect of Ayurvedic treatment, *Aushada* or the use of medicinal plants and drugs was another; and various exercises or vihara was the third[17]. Ayurveda lays great emphasis on diet regulation. According to Ayurvedic concepts food has great influence over physical, temperamental, and mental development of an individual. The food is the basic material for production of the body and life supporting vital matter known as *rasa*. The *rasa* is converted to body components and supports all type of life activities.

Philosophy of Ayurveda: The basic foundation of Ayurveda lies on the doctrine according to which whatever is present in the universe (*macrocosm*) should be present in the body (*microcosm*). It is a conception that universe is composed by five basic elements namely; *Prithvi* (Earth), *Jala* (water), *Teja* (fire), *Vayu* (air) and *Akash* (space/ether). The body is formed by the combination of these elements and in the body these basic elements join togather to form *Tridoshas* (humors) named *Vata* (air), *Pitta* (bile) and *Kapha* (phlegm)These humors regulate the basic physiological functions in the body. Apart from the humors, there occur seven basic tissues (*saptadhatus*); these were *rasa* (plasma), *rakta* (blood), *mamsa* (flesh), *asthi* (bones), *majja* (marrow), *shukra* (semen) and three waste products of the body (mala) such as; faeces, urine & sweat. The state of equilibrium between these three humours represents the healthy condition of the body and the disturbance in equilibrium among these leads to various kinds of diseases. The growth and development of the body depends on food provided and the food is also supposed to be composed of five basic elements mentioned above and it is thus considered to be the basic source to nourish and replenish the body after the action of

16 Bernier, *Travels in Mogul Empire*, Eng tr. A. Constable, Vol2, London, 1826, p.46.
17 Op.cit. D.P Chattopadhyaya, Vol3, Part 1, p. 236.

agni (bio-fire). The tissues are thus the structural components and humours the physiological components formed by the combination of five basic elements in different ways and proportions[18]. In Ayurvedic system diagnosis is done by taking careful note of patient's internal physiological characteristics and mental disposition. Other factors to be studied are, affected bodily tissues, humors, and the location of disease occurrence, patient's resistance and vitality, his daily routine, dietary habits etc. The general examination is called tenfold examination. In this the physician takes into account the following parameters 1. Psychosomatic constitution 2. Disease susceptibility 3.Quality of tissues 4. Body build 5. Anthropometry 6. Adaptibility 7.Mental health 8.Digestive power 9. Exercise endurance and 10. Age[19].

Achievements: One of the branches of Ayurveda i.e. *salya* (surgery) made a commendable progress in ancient India. In *Susruta Samhita* different types of surgical operations and various instruments used and methods of surgery are discussed[20].Susruta is credited with performing world's first rhinoplasty, using anesthesia and plastic surgery. Many of the surgical instruments used by him are similar to the present day instruments[21].Besides surgery Susruta also mentions about more than 1100 diseases in his treatise. Susruta's treatment was medicinal dietic and prophylactic[22]. One of the laudable achievements of Indian medical practitioners was the joining of the lips of the wound by causing them to be bitten by ants, leaving behind the mandibles which would clamp the wound. This practice was later adopted by Arabs[23].

Charaka's work is important from the point of view that in this work he classified remedies drawn from vegetable, animal and mineral sources. Over 2000 vegetable preparations made from roots, barks juice, resin, leaves, flower, fruit, seeds or sap of

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18 Ravishankar and Shukla, Indian Systems of medicine: A brief profile, *Afr.J.Trad.CAM*, Vol. 4(3),2007, pp.319-337.

19 Ibid. 322.

20 Susruta, *Susruta Samhita*, Vol 1,ed. Kaviraj Kunjalal Bhishagratna, Calcutta, 1916, pp. 36-70.

21 Manohar Bharadwaj, *History of science and technology in ancient India*, Delhi, 2010, p.61-62.

22 P.N Chopra, *India-An encyclopaedic survey*, New Delhi, 1984, pp. 206, 207.

23 B.V Subbarayappa, *India's contribution to history of science in India's Contribution to world thought and culture*, ed. Lokesh Chandra et al, Madras, 1970, p. 58.

plants and trees has been described by him as well as method of their preparation and administration[24].

Though Ayurveda had made much progress in the field of medicine and surgery, it was not wholly rational because along with medicine and surgery, the Indian medical men prescribed prayer also as an efficient form of remedy. In *Susruta samhita* Susruta writes “Children of the families in which the gods, the Pitris (departed fathers), the Brahmans, the pious, the preceptors and the seniors and the guests are not properly worshipped and attended upon and wherein the rules of cleanliness and virtues are not observed and the members of which do not make daily offerings to the gods and give alms to beggars and live on food prepared by others and eat from broken bowls and plates of Indian bell-metal would be the proper persons whom you might strike with impunity and by your malign influence lay them up with diseases peculiar to infant life. (It shall be your duty to see that iniquities of the parents are visited on their children. Attack them without least compunction of heart and ample means of subsistence will be thereby secured to you). There the parents of those children will worship you in their calamities and you shall get plenty to live upon." Thus the belief in *Grahas* came into being and it was believed that person with malignant *graha* was difficult to cure[25].

Ethics to be followed by Ayurvedic medical practitioners:

In Indian system of medicine, medical instruction was preceded by a consecration ceremony, or *upanayana*. While training emphasis was given on theoretical as well as practical aspects and methodical instructions in surgical operations. Accordingly the pupil was trained to open blood vessels of dead animals, to examine openings of worm-eaten wood, bamboo etc., to bandage limbs of a doll, and to practice cauterization and branding on tender flesh etc.[26]

D.P Chattopadhyaya writes about the ethics that were to be followed by a new entrant in the field of medical education which were obligatory in both theory and practice. There were general ethics, professional ethics and ethics related to surgery. The

24 Op. cit. P.N Chopra, pp. 206,207.
25 Susruta, *Susruta Samhita*, Vol 3,ed. Kaviraj Kunjalal Bhishagratna, Calcutta, 1916, p.163.
26 Op.cit. Poonam Bala, pp.26&27.

general ethics included the instruction given to the student in presence of fire about his appearance and conduct. He was also given sound moral as well as practical advice by his preceptor. The student was to be aspiring and should try to increase his proficiency by all possible means so that he may be considered a life giver to the people. The qualification of physician was very important. Besides having theoretical knowledge he was to be expert in practical application. A proper code of conduct was to be followed while treating female patients. The student was instructed before entry into medical profession that not to treat ladies in absence of their husbands and guardians and close contact with ladies was prohibited according to *Susruta Samhita*. The professional ethics included ability to determine the curability and incurability of diseases. Referring to *Charaka Samhita* D.P Chattopadhyaya writes that if any physician attempts to treat an incurable disease he is bound to lose wealth, knowledge and reputation. A wise doctor would never take up the patient who was beyond all treatment. Surgical ethics meant that the surgeon was to be more cautious and needed to be well trained besides having practical knowledge. For that he was to overcome his doubts by actually seeing surgical anatomy and studying appropriate texts before starting the practice.

These ethics were taught from the very first day of admission and were repetitively taught so that the physician would not act unethically after entering into the profession[27].

Siddha system:

Besides Ayurveda another system of medicine predominant in India was Siddha system. The term Siddha is derived from word '*Siddhi*' which means achievement. This system became more popular in south India and the texts regarding siddha system include both medicines and chemical preparations. The basic philosophy of Siddha system was preparation of drugs which would stop the decay of body and according to it this was not possible by using herbal drugs which themselves tend to decay. So it recommended the preparation of drugs from mineral sources. In preparation of these drugs mercury and

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27 D.P Chattopadhyaya, *History of science philosophy and culture in Indian civilization*, Vol XII, Part 2, *A historical developmental study of classical philosophy of morals*, ed. Rajendra Prasad, New Delhi, 2009, pp. 449-455.

sulphur played a major role separately as well as in combination[28].Those who achieved supreme knowledge in the field of medicine, yoga or tapa (meditation) were called Siddhars. It is believed that eighteen *Siddhars* contributed to the development of Siddha medicine.

Philosophyof Siddha System:

According to the Siddha philosophy matter and energy as dominant entities have a great role in shaping the nature of universe. These are called Siva and Sakthi in Siddha system. These two entities can't exist without each other and hence are inseparable. According to this system universe is made up of five proto-elements. The concept of five proto-elements and three doshas are similar to the Ayurvedic system. The difference lies in the method of diagnosis in certain aspects. Diagnosis in Siddha system is carried out by '*ashtasthanapareeksha'*(examination of eight sites) that includes examination of *nadi* (pulse), *kan* (eyes), *swara* (voice), *sparisam* (touch), *varna* (colour), *na* (tongue), *mala* (faeces) and *neer* (urine). These examination procedures are well explained in classical Siddha literature than in Ayurvedic literature. Also, in Siddha system surgical procedures have not mentioned in detail as in Ayurveda[29].

Origin, Development and advent of Unani medicine in India:

The term Unani is uncommon in Indian Arabic and Persian pre-colonial medical literature, the discipline was simply called *tibb* (literally medicine). In the Indo-Persian medieval literature the term is mostly found referring to Greek philosophers. The earliest known Indo-Persian medicine work that uses it in its title is the *Tak- mila-yi-Yunani* (Greek perfection), a tradition on treatment of diseases ordered from head to foot composed by Shah Ahl Allah (d. 1776), who also authored a work on Indian medicine entitled *Tak-mila-yi-hindi* (Indian perfection)[30].

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28 Op.cit. D.P Chattopadhyaya, Vol 3, Part 1, p.18.

29 Op.cit.Ravishankar and Shukla, pp. 325 &326.

30 Fabrizio Speziale, Linguistic Strategies of de-Islamization and colonial science: Indo-Muslim physician and Yunani denomination, IIAS newsletter, #37, June 2005.

The theory and practice of Unani medicine originated in Greece.[31] The Greeks had gathered a lot of rational information on maintaining good health since centuries. Their philosophers had developed rational theories and methods of treatment. In 5th century B.C. Greek medicine was given form and recognition by Hippocrates or Buqrat (460-377 B.C.) who is considered as the father of Unani medicine. He freed medicine from superstition and magic and thus Unani medicine had a more rational approach. After Hippocrates, a number of Greek scholars improved and expanded the scope of this system. One of the most outstanding among them was Galen or Jalinoos (A.D 131-210). His philosophy and theories were based on experimental evidence. Agreeing to the philosophy of Aristotle who said "Nature does nothing without purpose" Galen believed postulated that like nature body too must have a specific function. To affirm this, he defined the structure and functions of all body organs and established a concept of anatomy as well as physiology of human body.

After travelling through different countries such as; Greece, Rome and Iran, Unani medicine reached the Arab world where it flourished under the Abbasid caliphate. The Arab scholars of that time converted almost all Greek, Roman and Latin medical and scientific works into Arabic. The city of Baghdad which was the capital of King Haroon Rasheed (786-809 A.D.) came to be known as great seat of knowledge and became famous for its efforts in the field of medicine. Many centres of academic advancement such as the *Bait-ul-hikmat* were developed. The government gave its patronage to scholars who translated other medical works into Arabic and gradually here the medical science got transformed into Graeco-Arabic or Unani system of medicine. Rhazes (A.D) one of the renowned healer of Arab world said that words written on a book are less than the experience of a doctor. His famous work *Al Havi Libre Continents* contains all practical and clinical aspects of Unani medicine. Other noteworthy Arab scholar who contributed to was Abul Qasim Zahravi. His work *Al tasreef*, a book on surgery is still considered a complete and comprehensive treatise with pictures and surgical instruments invented by Zahravi himself which were amongst the finest of the time. Zahravi was also the first to introduce a posture for women in labour, now called Walcher position.

[31] Greece is called Unan in Arabic.

Zahravi's works were referred to as documentary proof of Unani medicine in all European medical colleges for many centuries. Many modern surgeons give the reference of Zahravi in their works. The concepts of Unani medicine were further refined in 10th and 11th centuries by Ibn Sina (A.D. 980-1037) who was born in Bukhara. He studied philosophy and medicine and travelled widely. He wrote *Al Qanun fil tibb* or *The Canon* of *medicine*. This was compiled by bringing together all the ideas of Unani medicine which were scattered in various contemporary schools of scholasticism and the ideas of healing in these were less practical. So it had difficult to understand these. The work of Ibn Sina was considered as an authorative medical work throughout the world.[32]Ibn Sina was so famous that Isami[33] in his book *Futuhus-Salatin* makes a brief mention about him that at the age of sixteen he attained such a distinguished position that "physicians of the highest eminence came to read medicine with him to learn those modes of treatment which he had discovered by practice". This shows the awareness of Indians about developments in medical science across the world and their curiosity in this field[34].

The Greco-Arab or Unani medicine came to India with the early Muslim conquerors who brought with them their physicians and others who practiced different healing arts. Many physicians and scholars came to India at that time as the political and social conditions in their own countries like Persia, Iraq, Syria and other Islamic countries Central Asia were not congenial[35]. The Delhi Sultans and Mughals provided patronage to the Unani physicians and even enrolled them as state employees and court physicians. Between 13th and 17th centuries Unani medicine was at peak in India[36]. As the patronage came from court, unani medicine was mainly urban based. The rulers patronized hospitals, medical libraries, schools and important hakims. The first centre of Unani medicine in South Asia was set up in Lahore under the patronage of Khusro Shah,

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32 Prof. Jamil Ahmad & Hakim Ashhar Qadeer, *Unani: The science of Greeco-Arabic medicine*, New Delhi, 1998, pp. 13, 14, 15.

33 Ibn Sina (980-1037), generally acclaimed as al-Shaykh al Rais,the 'Chief Master', or *al-Muallim* al Thani , 'the Second Teacher', after Aristotle, was born in Bukhara. He was the leading physician of his time.He wrote encyclopedia of medical knowledge, *Al Qanun (The Canon of Medicine)*

34 Isami, *Futuhus Salatin*,Vol 1, Eng. Tr. By Agha Mahdi Husain, Calcutta, 1898.p 29.

35 O.P Jaggi, *History of Science and Technology in medieval India*, Vol 8, *Medicine in medieval India*, Delhi, 1977, p.98.

36 Op,cit. Prof. Jamil& Hakim Ashhar Qadeer Unani, p. 18.

i.e. son of last Ghazni king Khusro Malik[37]. It was made a subject in curriculum also which further led to its advancement both during Sultanate and Mughal periods. For example during Muhammad bin Tughlaq's reign *tibb* was made a subject of curriculum[38].Also many *tibbi madrasas* were opened. Firoz Shah opened the first tibbi *madrassa* inside a *deeni madrassa* (religious school)[39]. Unani medicine was further popularized by setting up of a large number of hospitals or *Shifakhanas* by Delhi Sultans and Mughal emperors for the poor and needy. Mohammad bin Tughlaq established hospitals and sometimes used to attend the sick himself[40]. Firoz Shah Tughlaq also built hospitals and Afif mentions about his donating of villages for the maintenance of *Shifakhana*[41]. Hospitals were built during Mughal times also. One of the Jahangir's twelve ordinances was that hospitals should be built and physicians to be appointed for healing the sick[42]. Shahjahan built a hospital at Ahmadabad where both Ayurvedic and Unani physicians were appointed[43]. In medieval India some of the rulers studied Unani tibb and were good practitioners also, For example; Firoz Shah Tughlaq had so much knowledge of the Unani medicine that he was himself involved in the treatment of the patients as a hakim/ Unani practitioner[44].

Like Ayurveda Unani medicine also faced a criticism from religious class at some point of time. The development of Unani medicine as a mechanistic medicine which was separate from religion caused a clash between its practitioners and the theologians who viewed medicine from the perspective of religion. For them medicine was a cultural system of beliefs embedded in the Quran and Hadith. Besides theologians Sufi saints who grew in popularity and respectability in the later Abbasid caliphate had disgust for it. They attributed healing powers to saints and shrines and questioned the claims of

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[37] Jan Van Alphen and Anthony Aris, *Oriental medicine: an illustrated guide to the Asian arts of Healing*, Shambhala, Boston, 1996, p.50.

[38] Firoz Shah Tughluq, *Futuhat -i-Firozshahi*, Eng Tr. Azra Alavi, Delhi 1996, p.15.

[39] Mohammad Idris. *The arrival of unani medicine in India around 12TH and13th century*,www.delhiheritagecity.org/pdfhtml/intangible/md-idris.pdf

[40] Muḥ ammad Qasim Hindu-shah Astarabadi Firista, *Tarikh-i- Ferishta*, Vol1 , Eng Tr. John Briggs, London, 1829,p236.

[41] Afif, *Tarikh-i-Firozshahi*, tr. R.C. Jauhri, Delhi, 2001,p.200.

[42] Jahangir, *Tuzuk-i-Jahangiri*, 2 Vols, Vol1,eng. tr. Alexander Rogers, ed. H. Beveridge, Delhi, 1989, pp.350 &351.

[43] S. Nadeem Ali Rezavi, *Physicians and professionals in Medieval India* in Deepak kumar, *Disease and Medicine in India*, New Delhi, 2001, Reprint 2012, p.49.

[44] Firoz Shah Tughluq, *Futuhat-i-Firozshahi*, Eng Tr. Azra Alavi, Delhi, 1996, p 13.

medicine. For example; a prominent Sufi thinker al Ghazali of twelfth century was a staunch critic of medicine. The rejection of Unani medicine by religious class was particularly strong towards the end of Abbasid Caliphate[45]. The Sufi mysticism was thus the cause of decline of science. More emphasis was laid on religious studies. The spirit of philosophical inquiry was discouraged and preservation rather than investigation was give prime importance. Similarly Bhakti marg which laid stress on the importance of bhakti or devotional faith as a means of salvation as opposed to ‘work path’ (*karma marg*) and the ‘knowledge path’ (*jnana marg*) implies marginalization of science[46].

Philosophy of Unani medicine:

The essential principles that control the functioning of the body according to Unani medicine are seven in number. These are elements (*arkan*), temperament (*mizaj*), humours (*akhlat*), organs and systems (*aza*), vital breaths (*arwah*), energy (*quva*), and actions (*afzal*). The human body was believed to consist of four elements. These were earth, water, air and fire. The reaction of these elements determined a person’s temperament which could be classified broadly as hot, cold, dry or moist. The humours are also four are; phlegm, blood, yellow bile and black bile. These are produced from food after it gets digested. In a healthy individual these are balanced, but when their proper proportion is disturbed, there is loss of health[47].

Exchange of Ideas:

Arabs were acquainted with India and Indian things long before the rise of Islam. The expansion of Arab empire towards east, the conquest of Sind and settling of Arabs there brought them into close contact with Indians and Indian culture. Arabs appreciated the advancement of Indians in the field of medicine and mathematics[48]. The trade in Indian medicines between Middle East and Hindustan that was in the hands of Arab traders much before the consolidation of caliphate and along with trade medical knowledge was carried to Damascus and Baghdad from India. Indian medical texts also attracted Persians

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45 Seema Alavi, *Islam and healing: Loss and recovery of an Indo-Muslim medical tradition (1600-1900),* New Delhi, 2007, p.26.

46 Op.cit. D.P Chattopadhyaya, Vol3, Part 1, p.420, 421 , &422.

47 K.P Bahadur, *A history of Indian Civilization,* Vol II, Part II, New Delhi, 1980, p.339.

48 Op.cit. O.P Jaggi, p, 73.

and Arabs. A physician Perzoes from Sassanian Empire was sent to India to procure medical literature which was then translated into Persian[49]. Unani pharmacology was very much influenced by Indian sources from the very beginning. As India was rich in plant and mineral sources, Unani physicians gradually increased their knowledge and used Indian drugs by borrowing from Ayurvedic sources and undertook their own research[50]. In this way they enriched their own medical system. It was in the period of Umayyad and Abbasid Caliphates that the intellectual exchange of Ideas between Arabs and Indians became more dynamic. Yahya bin Khalid, the Arab general who laid the foundation of the Caliphate not only invited Hindustani *vaids* to Baghdad but also sent an agent there to collect information about Indian plants and herbs. These agents used to interact with Brahmans in India who were the sources of medical knowledge. In the Abbasid caliphate in the reign of Caliph Mansur, an important intellectual from India was invited to Baghdad who presented his medical book *Siddhanta* to the Caliph. This kind of exchange further increased under his successor, Harun Rashid, who invited several *vaids* from Hindustan to cure him of his illness. Many of the *vaids* were appointed in the department set up by him called *Bayat-al-hikmat* to promote the collection of scholarly manuscripts of all disciplines. These included Manaka and Ibn Dhan who later settled in Baghdad. Ibn Dhan was appointed as chief officer of the biggest hospital of Baghdad, and he translated into Arabic the famous Sanskrit books on Ayurveda, Susruta on surgery and Sameeka on the cures for poisons[51].*Susruta samhita* was called Sasrad or Susrud in Arabic. During Abbasid period *Charaka samhita* was also translated into Arabic. It was called Sharak in Arabic. *Ashtangahridaya* was rendered into Arabic by Ibn Dhan and was called *Astankar, Astagar* and *Asankar, Nidhana* of Madhava as *Nidan*, Badan and Yedan. The Siddhayoga was also translated by Ibn Dhan and was known as *Sindhastaq* or *Sindhshan*. Also there was a treatise on women diseases written in 8th century by an Indian woman whose name is mentioned as Rusa in Arabic texts[52]. This also shows interest of Arabs in Indian medical science. Large scale translations of Sanskrit medical literature into Arabic were done under the patronage of *Bayat-al Hikmat* in Baghdad. A

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49 Op.cit. Seema Alavi, p.20
50 Op.cit, Jan Van Alphen & Anthony Aris, p.62.
51 Op.cit. SeemaAlavi, pp.21,22.
52 N.H Keswani, *The science of medicine and physiological concept s in ancient and medieval India*, New Delhi, 1974, pp.24,25.

Sanskrit book on poisons called *Sarat* was translated into Persian by Manaka and Sanjahl, another Indian translated *Charaka samhita* into Persian which had already been translated into Arabic. Those agents which were sent by the Caliph to explore the materia-medica in India used to learn Sanskrit which they saw as the key to Indian medical knowledge. One of these scholars was Muhammad bin Ismael Tanoji, an expert 9th century physician who lived in Baghdad. He learnt Sanskrit and became expert in psychology (*himyaat*) .Many scholars came to India to hold discussions on culture and religion in the courts of the rulers since the rulers were keen to hold discussions with the foreigners and they finally settled in India and translated Sanskrit texts into Arabic and vice-versa; For example; Alberuni and thus a rich literature on Arabic, Sanskrit and Persian was produced.[53]There was a close interaction between Ayurveda and Unani systems. The Unani physicians who fled from Persia to settle in India used various Indian drugs in their clinical trials and as a result of their experiments enriched their own system of medicine with numerous drugs[54]. Likewise a number of drugs like *aphim* (opium), *gwarpatha* (aloe-vera), *kesara madhakarni* (khurasaniajwain), *mastagi* and several others used in Unani medicine were introduced into Ayurvedic materia-medica[55]. In some books of Unani medical literature Ayurvedic diets and drugs are discussed. For example; Hakim Sharif Khan, a noted and learned physician during Muhammad Shah's reign wrote a famous work *Talif-i-Sharifi* and *Tuhfa-Alam Shahi*. Besides other medical works, these two works throw light on Ayurvedic pharmacological and dietry knowledge respectively[56].During Mughal period *Ganj-i-badaward* written by Hakim Amanullah Khan was an extensive treatise dealing with simple and compound drugs used in both Ayurveda and Unani tibb. Also *Qarabadi Qadri* written by Muhammad Akbar Arzani (physician during Akbar's reign), mentions many drugs which were exclusively Indian in origin[57].Also Indian medical system borrowed the knowledge of metallic acids and many processes of iatro-chemistry from them[58]. At that time it had become a practice that the medical practitioners used to compile their experiences in the form of a book and presented it to the ruler. So a large

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53 Op.cit. SeemaAlavi, pp.21,22.
54 Op,cit. Prof. Jamil& Hakim Ashhar Qadeer Unani, p.18.
55 Op.cit. D.P Chattopadhyaya, Vol3, Part 1, p. 24.
56 D.P Chattopadhyaya, *History of Science, Philosophy and Culture in Indian Civilization*, Vol III, Part 2, ed. A. Rahman, New Delhi, 2002, p.291.
57 Op.cit. Jan Van Alphen and Anthony Aris, p.62.
58 Tara Chand, *Influence of Islam on Indian Culture*, Allahabad, 1963, pp. 140 &141.

number of books were compiled both by Unani physicians and Indian practitioners. These books were mostly translations of Indian treatises into Persian which was the court language and vice-versa. ; During Muhammad Tughlaq's reign Zia Muhammad Rasheed Zangi, wrote *Majmuah Ziai* which was based on both Persian and Sanskrit texts[59]. During Sikandar Lodhi's period Mian Bhowa (his eminent courtier) was deeply interested in medical science. On the basis of his knowledge he informed Sultan that Unani medicine was not best suited system for the people of India where climate and vegetation were different from Greece or Arabia. So he gave his suggestion to Sultan to get a book compiled in Persian that contains best of Ayurvedic practices and its drugs[60]. So he employed scientists and copyists and got copies of books on different subjects made by them. The books were brought from different countries like Khurasan and were given to the scholars and scientists. All the scribes were kept engaged in transcribing books. He also invited scholars from different parts of India, Khurasan, Iraq and Transoxiana along with their learned works. He got books on medicine collected and got selections made from them. One such book compiled on medicine was called *Tibb-i-Sikandar Shahi*. It is an outstanding work and no book on medicine in India could be compared to it at that time[61]. Besides these some other texts based on Sanskrit were *Dasturul Atibba* by Muhammad Qasim Hindu Shah Ferishta, *Talife Sharif* by Hakeem Muhammad Sharim Khan and *Tufatul Momin* of Mominul Husaini. Also there were some texts written in 16thcentury and onwards in which influence of Arab medicine. For example; *Rasapradipa*(written by Prabhakara in 1583), *Rasakaumudi* (written by Srikanth in 1575), *Bhavaprakasha* written by Bhavamishra (14th century), *Dhatukriya* (supposed to be written by Bhairava nandayogin), *Arkaprakasha* (attributed to Ravana) etc[62].Thus the process of synthesis led to fusion of Unani medicine and Ayurveda. The fusion seems to have begun in 13th century. The Persian translation of Alberuni's work *Kitab al Saidana* (a treatise on medicine) done under the patronage of Sultan Iltutmish throws light on it. The translator Abu Bakr bin Ali al-Kasani (an immigrant from Central Asia) did not simply translate the Arabic terms into Persian but also added fresh material regarding

59 Op.cit. SeemaAlavi, p. 29.
60 Op.cit. O.P Jaggi, p.114.
61 Shaikh RizqUllah Mushtaqui, *Waqiat-e-Mushtaqui*, Eng tr. Iqtidar Husain Siddiqui, New Delhi, 1993, p. 83.
62 Yusuf Husain, *Glimpses of Medieval Indian Culture*, Bombay, 1957, p. 94.

location and particulars of certain materials which are not found in the original Arabic text. He added Hindi equivalents while referring to Kashmiri fruits particularly apples. Thus pointing to the interaction between the experts of indigenous system and foreigners who settled in India. He mentions about Indigo which was not only used as a dye but also served as an ingredient in certain medicines. It is mentioned that its use masks the defects of ageing and that it was mixed with henna and used to dye both skin and hair[63]. In Mughal India many Hindu scholars learnt Persian at madrassas. The curriculum in the madrassas included Avicennian medical and scientific texts, such as the Qanun and its commentaries. Hindus began to write Persian scientific works; For example; Anand Ram Mukhlis wrote *Rahat al-faras*, on horse and its treatment[64]. Many physicians having knowledge of Unani medicine had also acquired the knowledge of Indian system of medicine showing its appreciation by the Unani practitioners. For example; During Babur's reign Hakim Yusuf bin Mohammad Beg alias Yusufi who was an extraordinary genius investigated closely various branches of medicine. He collected all the available information from Indian system of medicine regarding general principles, diseases, diagnosis,and treatment and composed medical works on the basis of his experience with Unani medicine and knowledge of Ayurveda. Thus he was one of the pioneer Persian scholars who wrote medical books integrating the two systems of medicine[65].He dedicated his masterpiece *Qasidah darhifaz-i-sihhat* to Babur[66].Some Unani physicians became so much adept in Indian medical system that Indian practitioners came to them for learning. Foexample; MianTaha had memorized 4000 *shloks* of Indian medical science and was so expert in Indian medical system (along with Unani medical system) that Indian medical practitioners used to take lessons from him[67]. Persian medical treatises were consulted by Indian physicians also.For example; *Tohfatul momineen* , a17th century treatise of Muhammad Momin Husaini Tunkabani was widely consulted by Indian physicians. In this text effects of various drugs and the views of different

63 Iqtedar Husain Siddiqui), Science of medicine and hospitals in India during Sultanate period, *Indian Historical Review*, Los Angeles (London), 2012, 39(1), 11-18.

64 Fabrizio Speziale, The circulation of Ayurvedic Knowledge in Indo-persian medical literature, presented at symposium, *Ayurveda in post-classical and pre-colonial India*, International institute of Asian studies, Leiden (Netherlands), 2009.https://halshs.archives-ouvertes.fr/halshs-00584749

65 Op.cit . O.P Jaggi, p. 144.

66 Op.cit. SeemaAlavi, p. 29.

67 Op.cit. *Waqiat-e-Mushtaqui*, p.193.

physicians about it are discussed[68]. Likewise writing of Indian treatises by Muslim rulers was also encouraged. Forexample; *Chikitsamrita*[69] written by Milhana was a notable work in Sanskrit on Ayurvedic therapeutics written in thirteenth century in the Sultan's capital at Delhi[70].Although the primary languages used in the texts of Unani medicine were Persian and Arabic, there were few Sanskrit texts on Unani medicine For example; *Hikmat prakasa* written in Sanskrit by Mahadev[71].Besides Unani medical practitioners, Indian medical practitioners were also patronized by the rulers. For example; During Akbar's reign four famous Hindu practitioners who were also patronized by him were Mahadev, Bhim Nath, Narayan and Sivaji are mentioned. Abul Fazl has also mentioned about these in his *Ain-i-Akbari*.[72].Hospitals were established in which both Unani and Ayurvedic hakims worked together. This shows the broader outlook of the ruling class in patronizing both the systems, For example; Irfan Habib refers to Barani's mentioning about Ayurvedic practitioners in Delhi in early fourteenth century such as Mah Chandra, the physician, Nagoris (brahmans) and Jayatis (Jains?). Also when Sultan Mahmud Khilji built a hospital at Mandu (Malwa) in 1442, he ordered that both Ayurvedic and Unani medicines should be procured as prescribed by the Ayurvedic and Unani doctors respectively[73]. During Aurangzeb's reign, Nawab Khair Andesh Khan, a famous physician and auther, established a hospital where hakims worked along with vaids and distributed medicine free of cost[74]. Knowledge of Unani Medicine was closely linked with the aristocracy as the patronage came from ruling class[75] but medical services were provided to the common people as state patronized the building up of hospitals for treating the poor and needy.

Thus it can be concluded that there were two main types of indigenous medicine before the coming of Unani or the Greeco-Arab system of medicine. These were Ayurveda and Siddha system.The Unani medicine came to India with the coming of Arabs in India and it received the patronage of the ruling class and this led to its

68 Op.cit. K.P Bahadur, pp. 339 & 340
69 It was written in 1224 A.D. in the reign of Iltutmish.
70 Irfan Habib,*The study of civilization*, New Delhi, 2008, Rept. 2011, p. 76.
71 Op.cit. Jan Van Alphen & Anthony Aris, p. 33.
72 AbulFazl, Ain-I Akbari, Vol1, Eng. tr. H. Blochmann, New Delhi, 1989, p. 613.
73 Op.cit. Irfan Habib, p.76.
74 Op.cit. Poonam Bala, p.35.
75 Op.cit, Seema Alavi, p.32,

development. During ancient period Brahmans were having a feeling of disgust for the medical science due to certain rules of *Dharma Shastras* which were against the medical practice and physicians were considered impure. It was with Unani medicine also which was also opposed by the theocracy in the beginning of its growth. But with course of time the perspective regarding medical science changed in India and physicians began to get a respectable position in the society in Buddhist period and leading to further developments during the period of Delhi sultans and Mughal emperors when another system of medicine arrived in India i.e. Unani medical system. Besides giving patronage to Unani system, Ayurvedic system was also patronized. In the hospitals both Ayurvedic and Unani Hakims were appointed. There was exchange of ideas between the systems in case of material medica and there was a fusion of the two systems also. Translations of the medical treatises were also carried out under the state patronage.

Table showing some renowned medical treatises written during Sultanate and Mughal period

Treatise	Auther	Description
Majmu ah i Diai	Hakim Zia Muhammad	It was compiled during Muhammad bin Tughlaq's reign. A deep influence of Ayurveda is reflected in this book. The auther has given Hindi names of diseases and drugs instead of Arabic and Persian names. Thus it was a pleasant mixture of Ayurveda and Unanitibb.
Tibb-i-Firozshahi	Firoz Shah Tughlaq	In this treatise Firozshah gave details of treatment of ailments, which have not been covered even in Al Qanun of IbnSina.
Tibb-i-Sikandri	MianBhowa	It was written with the help of learned vaids (Ayurvedic physicians) as well as several Ayurvedic books of Caraka and Susruta, Jatukarna, Bhoja, Bhela, Madhava, Vagabhata,

		Nagarjuna, Nagasena and others. He dedicated this book to Sultan Sikandar Lodhi.
Asl al-Usul	Muhammad.bYusuf Herwi	It was written during Babur's reign. It laid qualifications and restrictions for Unani physicians.
Dalail al Bawl	____	It was a treatise on examination of urine. It was written in Persian in 1535.
Dalail at Nabd	____	It dealt with diagnosis of diseases by examining the pulse of patients.
Fawaid al Akhiyar	____	This was a book written on hygiene written in 1507.
Ilaj al Amrad	____	This was written in 16th century containing information about treatment of diseases.
Jami al Fawaid	____	This is a commentary on *Ilaj al Amrad* . It has given an interesting account of the treatment of all types of diseases of various parts of human body and also their treatment.
Dastur al Fasd& Khawas al Ashiya	Hakim Muhammad Beg	These were very important works written during Babur's reign.
JawaharulUlum	Muhammad Fadil	It was written during Humayun's reign. It throws light on Anatomy, physiology, human

	bin Mohammad al miskini	temperament, effect of seasons on human body, general principles and guidelines on hygiene and methods of regulating life. It also gives details of different diseases and methods of curing them. A brief description of different drugs, their function and their methods of preparation is also given. Information on qualities of different foods is also given.
Tibb-i-AbulFath And Qanuncha	Hakim AbulFath Gilani	Both of these were written during Akbar's reign
Shara-i-Qanun	Hakim Ali Gilani	It's a commentary on *Al-Qanun fil Tib* of Ibn Sina.
Bayad-i-Gilani	____	This treatise is a collection of prescriptions of Hakim Ali Gilani.
Diya al Ayn	Ayn-ul -MulkShirazi	This work is on ophthalmology.
Fawaid al Insan	____	This work written by Aynul Mulk Shirazi was written on Akbar's order. It is a treatise on simple drugs.
Shifa al Alil	Hakim Muzaffar b. Muhammad al	This book is gives information about medicines, their preparation and regulation.

Khulasat al Tibb	Hussaini al Shifai	It was compiled in 1591.
Khulasat-i-Binai	Hakim Abdullah Dawai	It is a comprehensive treatise covering almost all aspects of Unani medicine and almost all scattered useful material is assembled in this.
Ganj-i-Badaward or Qarabadin Khan Zamani	Hakim BinaLahori.	It is an encyclopedia of *Qarabadin* (Unani pharmacopoeia) written during Jahangir's reign. It is a collection of all medical works of old and new physicians upto the Mughal period and is a good collection of Unani and Ayurvedic pharmacopoeia.
Dastur al Hunud	Hakim Amanullah Khan.	This work is translation of Sanskrit text *Madana Vinoda* of Raja Madan Pal, translated in 1635 by Hakim Amanullah Khan. It deals with properties and actions of simple drugs. It also describes the Ayurvedic theory of *tridosa* (vata, pita, kapha) which is similar to Unani *Akhlat* (humours).
Umm al Ilaj	____	It deals with different forms of diarrhoea and their treatment.
Miftah al Hudud	____	It was dedicated to Mahabat Khan during Jahangir's reign.
Majmuah i Hakim al Mulk	____	It was written during Shahjahan'sreign.It mostly deals with medicine but other topics like theology, philosophy, creation of universe (cosmology),

		geography, rhetoric, magic, alchemy have also been discussed.
Shajrah-i-Danish	Hakim Nizamuddin Gilani	It is a collection of articles on rational sciences and medicine, but major portion of this work is devoted to medicine.
Khawas-al-Adviyah	____	This treatise describes characteristics and action of simple drugs.
Anis-al-Mualijin	____	This is also an important medical work.
Tibb-i-Darashikohi	Hakim Nuruddin Muhammad Abdullah	It was also called *Ilaj-i-Darashikohi*, dedicated to DaraShikoh. This book contains sayings and tested prescriptions of Greek as well as Arab physicians like Hippocrates, Galen, Razi, IbnSina and others.
Khayr-al-Tajarib	____	It was a book on medicine written during Aurangzeb's reign.
Hasthiyah-i-Sharah-i AsbabwaAlamat	Khayr Andesh Khan alias Muhammad Khan	It is an annotation on the famous commentary of Allamah Nafis b. Aiwaz Kirmani, known as Sharah-al asbabwa-Alamat.
Sharh-i-Mujaz al Qanun	Hakim Alavi Khan	It is a commentary on the abridgement of world famous encyclopaedic work of Ibn Sina, *Al Qanun*.

Jama al-Jawama Muhamamdshahi	____	It was dedicated to Muhammad shah (1718-48).
Ahwal-I Aaza al Nafs	____	It deals with chest diseases.
Matab-i- Hakim Alavi Khan	____	It is a collection of tested prescriptions of Hakim Alavi Khan.
Risalah-i-Qawanin-i-Ilaj	____	It describes diagnosis of diseases and research on drugs and foods.
Risalah-i-Amraz-i-Atfal	____	It is a book on child diseases.
Tadhkirat-al Ilaj	____	It deals with diseases of head.
Takhlis-i-Tibbi Nabawi	____	It is the summary of *Al Minhaj al Sawiwa al Manhal al- Rawifil Tibb al Nabawi* of Allamah Jalaluddin Suyuti which was translated by Hakim Arzani for Aurangzeb.
Tibb-i-Akbar	Hakim Arzani	It is a Persian translation and commentary on famous medical book *Sharah al Asbabwa al Alamat* of Nafis b. Aiwaz Kirmani(1701).
Mufarrah-al-Qulub	____	It is a commentary on *Qanuncha* of Muhammad b. Mahmud Chaghmini.
Mizan-al-Tibb	____	It discusses several diseases, their causes,

		treatment and the principles of their treatment.
Taarif-al-Amraz	____	In this book auther has dealt with various diseases, giving explanations about medical terms.
Mujarrabat-i-Akbari	____	It is a collection of prescriptions of many physicians under several chapters on diseases.
Qarabadin-i-Qadri	____	The auther has dedicated this work to Murshid (guide), the famous sufiShaikh Abdul Qadir Jilani.
Tibb-i-Hindi	____	It deals with experiences of Indian physicians with regard to medical treatment.

CHAPTER – 2

Chapter-2

Superstitions and Myths related to diseases and their cure

The Indiginous system of medicine in India was closely linked with religion since ancient times. Ayurveda, an upaveda to Atharvaveda, is believed to be originated from the mouth of God. Though the science of medicine transformed from the magico-religious field to the empirico-rational line; the medical scholars still used to give the irrational causes for the occurrence of a disease as *Karmavipaka,* According to this, disease is the result of the sin committed in the past life or in the previous stage of the life by the victim. Though many scientific truths were revealed during the course of their research, they first explained the traditional knowledge they gained and then tried to explain their new findings on scientific lines. Thus, only after explaining the *Karmavipaka, new* diagnostic methods in their works can be found. It seems that they felt it their responsibility to safeguard the dharma in their society. They tried to instill fear against sin in the minds of the common people by propagating the concept of *Karma-vipaka*. In case of therapy also, they prescribed some propitiatory rites such *asdana* (donation), *homa* (religious rites), *japa* (meditation), *niyama* (rules of conduct) etc. to inculcate in the minds of the people charity, respect towards religion and righteousness. The medical scholars explained goal of indigenous medicine to safeguard the health of the healthful and curing those having any ailment. To maintain the health of the body and mind one was expected to perform his duties properly and within the appropriate time prescribed in the *Sastras*. The learned people and the ruling class followed the scriptures with regard for regulating life. But due to, illiteracy and incessant hard work for the livelihood it was very difficult to make the common people to follow these which did not allow them to think above the traditional customs and beliefs. They were satisfied with the things existed. But the intellectual class did not leave them to their fate. They made the people follow some of the important regulations for the maintenance of the health by incorporating them into the religious rituals by instituting some new festivals and customs in course of time. People worshiped deities in order to seek protection from diseases and natural calamities. For example; the seals from Harappa reveal that the Mother Goddess was worshipped as the guardian of the nature protecting the human

being from the natural calamities and the epidemics[1]. It was believed that *Varuna*, the cloud God could cause many diseases but the one particularly attributed to him was dropsy i.e. the swelling up of the whole body. To get relief, a hymn in praise of god was recited[2]. The Ayurvedic treatises of Susruta and Charaka are also not free from magico-religious concepts of medicine. Susruta Samhita contains a chapter on nine diseases of infant which are attributed to influences of nine malignant *grahas*. According to him these malignant stars (*graha*) affect the person of a child if the mother and the nurse do not follow the directions laid down in the *Sarira sthana* or where proper benedictory rites are not performed or the child is kept in an unclean state[3]. A treatise during Firoz Shah's reign is Rahat-al-insan (repose on human beings) composed in A.D 1385 by hakim Illias –bin-Sahib (also known as Zia), an eminent physician of the time. It was dedicated to Firozshah. In this work an interesting thing is that author has prescribed drugs as well as amulets for every disease. The author has also given some talisman. It shows that people were extremely superstitious in this period. The author has also written that the contemporary physicians were at loss to treat many diseases because they did not know how to get rid of evil spirits which, most people thought were the cause of all diseases[4]. Likewise *Ilajat-i-Darashikohi* by Nur-al-Din Shirazi also called *Tibb-i-Darashikohi* or sometimes *Dahira-yi-Darashikohi*, which is one of the largest medical manuals composed in Mughal India and dedicated to Prince Dara Shikoh shows a synthesis of religious and secular medical traditions of Islam. Nuru-ud-Din quotes in his work the *hadith* (sayings) of Muhammad (PBUH) and also mentions other Pre-Islamic prophets and Imams. At the beginning of his work he puts the well-known hadith of Prophet Muhammad (PBUH) according to which there are two kinds of sciences, the science of body, i.e. medicine and science of religion[5].

1 P.Hayamavathi , Religion and Popular medicine in Medieval Andhra, *Social Scientist*, 21 (1/2), 1993, p. 34-47. www.jstor.org/stable/3517837.

2 O.P jaggi, *History of science and technology in India*, Vol3, *Folk Medicine*, Delhi, 1973, p.xiv.

3 Susruta, *Susruta samhita*, Vol 3, eng. tr. edited by Kaviraj Kunja Lal Bhishagratna, Calcutta, 1916, p. 141.

4 Prof. Altaf Ahmad Azmi, *History of unani medicine in India*, New Delhi, 2008, p.13.

5 Fabrizio Speziale, The Encounter of medical traditions of Nur-al-Din Sirazi's Ilajat-i-Darashikohi, *e-journal of Indian medicine*, Vol 3 (2010), pp. 53-67.

In medieval India also along with scientific treatment people had superstitious beliefs regarding cause and cure of diseases. Sometimes the skill of a medical practitioner was attributed to a divine power. For example; while discussing skill of an expert physician in treating certain ailments Hasan Nizami writes about him (physician) in these words, "By the way he cured the ailment and resorted the patient to normal health he proved the truth of the adage that he was helped by Holy Ghost". Further Hasan Nizami while mentioning about the recovery of Qutubuddin from illness writes that he got cured by the medicine prescribed by a skilled physician and the prayers of the true devotees[6]. It further reinforces the fact that besides scientific methods of treatment people had firm irrational beliefs of curing ailments.

Abul Fazl in his *Ain-i-Akbari* has written about the causes of certain diseases attributed to *Karma-vipaka* and their treatment which are as follows;

Head-ache: It was believed to be caused by prior use of violent language to father or mother. The remedy for this was to make two *tolahs* gold images of Kasyapa and Aditi and to give them to the poor.

Madness: It was believed to be the punishment of disobedience to father and mother. The cure for it was to eat one mouthful on the first day, and to increase the food daily by same quantity for one month, and then to decrease in the same manner till one mouthful is again reached, and to make two images as above of two *tolahs* of gold and give them in alms with one cow.

Epilepsy: It was believed to happen as a result of having administered poison to a person on the command of another person. The cure for this consisted of these two images as above, a cow, a piece of land and thirty-two *sers* of sesame-seed, with repetition of some incantations in the name of Mahadeva.

Pain in Eyes: It was believed to arise from having looked upon another's wife. The cure for this was also Chandrayana.

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6 Hasan Nizami, *Taj ul Maathir*, Tr. Bhagwat Saroop, Delhi, 1998, p. 121.

Blindness: Blindness was believed to be the punishment of matricide which was followed by many years of suffering in hell. The cure for this was Prajapatya, having five kinds; 1) Bestowing a cow in charity 2) or one tolah of gold 3) or feeding twelve Brahmans 4) or throwing into fire ten thousand times a mixture of sesame-seed, butter, honey and sugar; 5) or walking a yojna, bare foot to a shrine. One or several of these was to be done in charity thirty times. Or he was to make a boat of four *tolahs* of gold, the mast of silver, and six paddles of copper. Or if it was as a result of punishment to disobedience to father and mother, the cure was same as above mentioned; the images of Kasyapa and Aditi should not be less than 2 *tolahs*.

Dumbness: It was believed to be the consequence of killing a sister. The cure was to bestow in charity a cow made of four *tolas* of gold, its horns be of two *tolahs* of silver, its hump of two or three *mashas* of copper with a brass vessel for milk, and for seven days he should eat a mixture of curds, butter, urine and cow dung.

Colic: It was believed to result from having eaten with an impious person or a liar. Its cure was fasting for three days and to give twelve *tolahs* of silver in charity.

Stone in the bladder: It was believed to be the punishment of incest with a step-mother. The cure for this was *Madhu-dhenu* (honey-milch cow). Milch cow of honey was formed like this; fourteen vessels full of honey, each of which should contain a man and a quarter, must be placed with one *tolah* of gold in front to represent the mouth; four *sers* of sugar-candy must represent her tongue; thirty-two *sers* of fruit, her teeth; pearls for two eyes; and two sticks of lignum aloes for her horns; two plantains stood for her two ears; and barley flour for her teats, with three sticks of sugar-cane for each leg. A white woolen cloth was to be thrown over the vessels to represent her hide, and Daba[7], which is a particular kind of grass is sprinkled above it. The hoofs were to be of silver, the hump of a ser and a quarter of copper: the tail of silk, thirty fingers in length, with skeins of silk eleven fingers long hanging therefrom. Two pieces of red cloth was to be thrown over her neck, and seven heaps of grain, each of two 8 *sers* weight, was made, and a brass vessel placed in front, and another vessel full of honey set near to represent her calf, and a

[7] The Kusa, *Poa Cynosaroides*; a sacrificial grass

copper vessel filled with sesame-seed. Next, certain incantations were made, and prayers were said, and alms given.

Lameness: It was the result of having kicked a Brahman. The cure was to bestow in charity a horse made of a *tolah* of gold, and to feed one hundred and eight Brahmans.

Consumption: was the punishment of killing a Brahman. A lotus flower of four tolahs weight of gold was to be made and the ceremony of *Homa*[8] performed and alms given to righteous Brahmans.

Tumour: was believed to be caused by killing a wife without fault on her part. The cure was to spread a black antelope-skin (*Krishna-jina*) and place thereon a heap of sesame-seed and a hundred *tolahs* or more of gold, and read incantations and perform *Homa* oblation. But the acceptance of such an offering was considered blamable.

Asthma: It resulted from having accepted of this oblation or of one of the sixteen great offerings, or alms at Kurukshetra. The cure for it was to take a buffalo of iron, with hoofs and horns of lead, and to make a sectorial mark of stone on its fore-head, garland it with flowers of the *Kaner* (*Nerium odorum*), and place upon it a black blanket and four tolahs of gold, and three man and half of pulse(Mash, *Phaseolus mungo*). The performer must have a sectorial mark drawn upon his forehead with the finger. The accepter of this charity is not well regarded.

Dysentry: Dysentry was believed to be the punishment for robbing a house. The cure was to give in alms a house and its necessary furniture, and seven kinds of grain, thirty-two *sers* of each kind, a hand-mill, a pestle and mortar, a repository for drinking water, a kitchen hearth, a broom, a cow, and money according to means[9].

R.C Jauhri quotes a tradition in medieval times, according to which, there were 18000 diseases in all. The ablest physicians didn’t know about 6000 diseases. Another six thousand diseases were known to physicians but they didn’t know how to cure them , thus it was only remaining 6000 diseases which could be correctly diagnosed by

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8 In this an oblation to the gods was made by casting clarified butter into the fire, accompanied by prayers and invocations.

9 Abul Fazl, *Ain-i-Akbari*, Vol 3, Vol 2 &3 combined, 1924, Rept. 2006. pp.235-241.

physicians and appropriate medicines could be prescribed for them .Thus when proper cure was not found the people resorted to unscientific ways of healing various ailments[10].

Since ancient times until now people have resorted to myths and superstitions as cure for various ailments especially when rational modes of treating diseases don't work. In medieval India people believed in many superstitions. They believed in good and bad omens. Different types of superstitions prevalent among people during medieval times in India as remedy for various ailments can be catagorised as under;

Visiting graves and tombs for recovery from illness:

People believed in visiting tombs and graves of Sufi saints, Martyrs and Walis[11] in order to get their blessings in order to recover for various ailments. Amir Hasan Ala Sijzi in his *Fawaid-al-Fuad* mentions Nizamuddin Awliya's discourse on the subject of visiting graves, and he said " My mother (God's mercy be upon her) fell ill. She asked me to visit the graves of such and such *Shaheeds* and *Walis*. As directed I visited those graves and told her about the vists on my return. Each time when I did that, I found her illness a bit alleviated, and a marked relief was visible." Then he referred to the time when Shaikh ul Islam Farid uddin was ill and he was present at Ajodhan and said that Shaikh also had sent him several times to visit the graves of *Shaheeds* (martyrs) who were buried there[12].

Tombs of saints and pirs were visited to offer *fatihah* (prayer) and invoke their blessing for the recovery from illness. Prince Khizr Khan visited tomb of martyrs buried at Indpat and prayed for speedy recovery of his father Sultan Alauddin Khilji[13].

Pelsaert in his account mentions that people used to visit the tomb of Pir Muinuddin Chisti who is buried at Ajmer. Pilgrims used to journey from distant places, most of those who were childless travelled there barefooted. King Akbar, also, who had no children in his youth, made a vow to this saint, and went there from Agra on foot with

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10 R.C Jauhri, *FirozTughluq* (1351-1388 A.D), Jalandhar, 1990, p.129.
11 Wali is a muslim saint or holy person.
12 Amir Hasan Ala Sijzi, *Fawaid-al-Fuad* of Sheikh Nizamuddin Awliya, Eng. Tr.Zia-ul-Hasan Faruqi, New Delhi, 1996, p.159.
13 B.N Luniya, *Life and Culture in Medieval India*, Indore, 1978, p. 206.

his wife Maryam Makani, travelling four Kos a day. As a memorial he erected a *minar* or milestone, at every Kos of whole road with a well besides it for the convenience of travellers, and also *mahals* or women's houses, 8 Kos apart. It so happened that his wife became pregnant, giving birth to Jahangir or Shah Salim, and consequently the people confidently believed that the Pir was the giver of this child and were further confirmed in their error. He further says "there are immense number of such pirs, each with his own skill and power of granting requests[14]. Bernier has mentioned about a mosque near a saint's tomb at Baramula in Kashmir. The saint's tomb was richly decorated. It is actually the tomb of sufi saint Baba Payamuddin Reshi[15]. Bernier writes that people who were flocked together at this place to seek the blessings of holy saint to get relief from illness. He further writes that there was a kitchen adjoining the mosque where large boilers were filled with meat and rice and he (Bernier) conceived that this was the reason why the sick were attracted to this place and got cured[16].

Muslims not only visited the tombs of great saints but like Hindus, who attached miraculous powers to the rivers and tanks, they also attributed healing powers such as removing of sterility of women, to the fountains and pools attached to the tombs of saints. For instance, the fountain attached to the tomb of Shaikh Nasiruddin Chiragh Dehlavi attracted a large number of people, who had a dip in it believing that this would lead removal of barreness of their wives. Emperor Jahandar Shah, along with his wife, Lal Kunwar, who was barren, resorted to the place to take bath on every Saturday in the hope of a male child"[17].In order to get their desires fulfilled people sometimes resorted to strange practices; e.g. Writing about Nagarkot Abul Fazl says "Near the town there is a shrine of Mahamaya which is considered as a manifestation of divinity. Pilgrims from distant parts visit it and obtain their desires. Strange is thatin order that their prayers may be favourably heard, they cut out their tongues…"[18]

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[14] Francisco Pelsaert, *Jahangir's India*,Eng. tr. W.H Moreland and P.Geyl, Delhi, 1972, p. 70.

[15] He was the disciple of Baba zainuddin rishi who was the disciple of of Sheikh Nuruddin Rishi.

[16] Francois Bernier, *Travels in Mogul empire*, tr. A.Constable, New Delhi, first edition 1891, 2nd edition 1968, p.414.

[17] Muhammad Umar, *Islam in Northern India during eighteenth century*, New Delhi, 1993, p. 439.

[18] Abul Fazl, *Akbarnama*, Vol II, Eng tr. H.Beveridge, New Delhi, 1979, p.317.

Belief in Charms, Amulets (*Naqsh*) and Talisman (*tawidh*) for curing diseases:

Wearing of amulets and talisman and belief in charms to cure diseases were other superstitious practices prevalent during medieval times in India .This practice is still in vogue in society especially when people are not satisfied with the modern medical treatment and resort to such superstitious practices.

During Medieval period in India Sufi saints used to prepare *naqsh* (amulets) and *tawidh* (talisman) and give to those who desired them. For easy and safe delivery, pregnant women wore amulets. Famous Sufi saint Nizamuddin Auliya of Delhi prepared such amulets and charms and once he observed that Naqash had Allah Kafi, Allah Shafi and Allah Wali (amulet was all suffering, all healing and all comprehensive). There were professional amulet makers in Lahore[19]. There are references showing people being cured with *tawidh*.For example; In *Fawaid-al-Fuad* Nizamuddin Awliya has narrated the story of one of his neighbours in the city where he previously lived. His name was Muhammad. Each year he suffered much from *naru* (a kind of skin disease). Once Khwajah (Nizamuddin Awliya) planned to visit Shaikh-ul-Islam Fariduddin (May his soul be hallowed), and that neighbor of his asked him to tell the Shaikh ul Islam about his disease and the intensity of suffering caused by it, and bring *tawidh* from him, when the Khwajah reached Ajodhan and met the Sheikh, he informed him of the condition of the man and asked for a *tawidh*. The Sheikh asked him to write it out himself. As commanded the Khwajah prepared the *tawidh* and placed it in the holy hand of the Sheikh who saw it and asked him to give it to his neighbor. When the Khwajah returned from Ajodhan, he handed it over to him. It proved a definite cure and he never suffered from the disease in life. In continuation of his discourse the Nizamuddin Auliya said that once he was present at Shaikh's *majlis* and he saw a curl fell from his beard and settled down on his bosom. He asked the sheikh if he could have it. Sheikh asked him to have it and he too the curl with all due respects. Khwajah narrates in *Fawaid-al-Fuad* that he had experienced tremendous effect of that one holy curl and thence forward whosoever in

[19] B.N Luniya, op.cit. p. 206.

grief and affliction came to him asking for tawidh, he gave curl to him. They kept it with them till they were cured or relieved of their grief[20].

Beveridge in his translation of *Akbarnama* writes that Raja of Kalji (which is identified with Cochin by him) sent a knife as present to the Akbar about which Raja say "But I have a knife which was made by former physicians of this country, and who constructed it according to talismans and charms. Though in appearance it possesses no value, yet its virtue is that whenever it is applied to a swelling it removes it". Further, Akbar says about the knife that more than two hundred persons who were near to death, obtained health by touching that knife[21]. Badaoni writes that the use spells were permitted to Muslims provided there was no suspicion (*shirk*) in them, that is associating anything with God. Spells were permitted to be used to counteract the effect of malignant eye; and also against bite of snakes and scorpions. They were also used in case of Jaundice which was thought to be an effect of evil-eye[22].

In Jammu men commonly wore amulets round their neck, consisting of small silver lockets containing sentences, or something which looks like a sentence, written by a fakir. The leaves of some plants like mango were also considered powerful for good. A garland of their leaves were hung across the village gate with a mystic inscription on an earthen platter in the middle (and a plough beam buried in the gateway with the handle sticking out) , whenever cattle plague visited or was dreaded in the village, and the cattle were driven under the charm on some Sunday on which no fire was lighted on any hearth. An inscription made by a *faqir* on an earthen platter, and then washed off into water which was drunk by the patient, was believed to be an efficacious remedy in illness.[23]

Prayers and belief in dieties for recovery from illness:

People had firm faith in prayers for recovery from illness. In *Fawaid-al-Fawad* Nizamuddin Auliya narrates that once Sheikh Nizamuddin al- Muayyid[24] fell ill and he

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20 Amir Hasan Ala Sijzi, op.cit. p. 164.
21 Abul Fazl,Vol 2 ,op.cit. pp. 499&500.
22 Al-Badaoni, *Muntakhab-ut- twarikh*, eng. tr. George S.A Ranking, Patna, 1973, p. 625.
23 S.D.S Charak, History and culture of Himalyan states, Vol 7, Jammu, 1997.p.95.
24 Sheikh Nizammuddin al-Muayyid(d.1273) lived during the reign of Sultan Iltutmish and was, thus, a contemporary of Khwajah Qutubuddin Bakhtiar. He was famous for his masterly actions.

called Shaikh Shahi Muya-tab (he was a pious man at Badaun) and asked him to pray with all his spiritual powers for his recovery from illness. Khwajah Shahi apologized and said that he himself was a man of piety and was asking him, just a commoner, to pray for him. He requested him not to say that any more. But Shaikh Nizamuddin was not prepared to listen to him and insisted that he should pray for his recovery. Khwajah Shahi, realizing that there was no way out, yielded and asked him to have two of his friends; (one was a righteous man known as Sharaf and other a tailor) called in for his assistance. Both the persons were brought and thus, all the three engaged themselves in praying and Shaikh Nizamuddin al-Muayyid recovered from his illness[25].

Further Amir Hasan Ala Sijzi writes in *Fawaid-al-Fuad* that once he had an abscess in one of his toes, which gave him acute pain, and, because of that, he had been unable to attend the *majlis* of Khwajah Nizamuddin Auliya. One day when he went to pay his respects to him, he apprised him of the reason of his absence. The Khwajah asked him as to whether it was *naru* (guinea worm) or something else. He submitted that previously he had it and at that time; as a preventive against dunbal[26], the recitation of *Surah-al-Buruj*[27] in *Sunnat rakats*[28] of afternoon had been suggested, and, as *naru* was of the same category, it was hoped that it would serve as preventive against it also[29].

Women held superstitious beliefs in many dieties and spirits to whom they assigned particular names. They venerated them in order to seek protection from them for their children at the time of calamity and misfortunes. When, for instance, small pox broke out, Women made offerings to goddess Sitla. The gardener's wife would be called in with flowers and meat was not cooked in the house during those days[30]. Godess *Sitala* is still worshipped among various tribal communities in order to seek protection from

25 Amir Hasan Ala Sijzi, op. cit. p. 210.
26 Acne or boil.
27 One of the chapters of Holy Quran.
28 Sunnat rakats are those prayers which Prophet Mohammad (PBUH) performed in addition to obligatory prayers.
29 Ibid, p. 310.
30 Muhammad Umar, op.cit. , pp. 438. Sitala is an omnipotent lady, who controls the life and death of children. Her name is not only pronounced with great respect but even addressed as mata (mother). The spread of small-pox is considered as a mark of her anger and its excess as of her motherly grace. Much respect is extended to door keepers and gardeners, with the conviction that they enjoy respect in the eyes of the mata. So long the small pox afflicts the child, nothing but masoor (pulses) and wheat bread is cooked in the house.

small-pox. Among the *Sikligars* of Punjab, *Sitala* worship takes place in the month of sawan called *Sitala-saptami*. The offerings are considered impure and nobody eats or takes them, because it is believed that the disease is transmitted to the person who takes them from the shrine. An adult person who has been attacked by small-pox and has recovered from it, does not perform these ceremonies. *Sitala* is worshipped when there is no small pox in the community; if the disease is broken out, no worship is offered[31].

Belief in Black magic, Witch craft and Evil eye as a cause of disease and their remedies:

Some elements of superstitions were deeply rooted in the rational minds. Even some eminent thinkers of the age could not rise above it. There was widespread faith in witch craft, sorcery and magic. It was believed that serious ailments could be created through magic. Shihab, a magician of Ajodhan, was once held responsible for a protracted illness of Farid-Ganj-i-Shakar. The saint sent some of his disciples to grave yard where they recited a particular formula and discovered near a grave a small statue with needles pricked all over it. When this statue was taken out and its needles were removed, the Shaikh it is said recovered from his illness[32]. Once Sheikh Nizamuddin Auliya also fell ill and an expert magician was invited to dispel the effect of magic from him. The man moved round the house of Sheikh, taking up dust and smells it and, ultimately, he discovered at a place certain things which were believed to be responsible for the magical influence on the Sheikh. Since then he began to feel some relief. In certain cases the government also resorted to prosecute a person who was involved in doing such magical practices. For example; when Sheikh Fariduddin was subjected to black magic and when that was found out and the names of the persons responsible for that (heinous act) had also come to light. The chief magistrate and other officials at Ajodhan sent those persons to great Sheikh and asked him as to how they should be dealt with. But Sheikh said they should be spared as he had already forgiven them[33]. Belief in witch craft was common. Enchantment practiced by women who were presumed to be

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31 O.P Jaggi, Vol3, op. cit. p. 38.
32 Khaliq Ahmad Nizami, *Religion and politics in India during the thirteenth century*, oxford university press, 2002, p.316
33 Amir Hasan Ala Sijzi, op. cit. pp. 331 and 332.

witch made people suffer from certain diseases. Belief in evil or malignant eye (*nazr-i-bad*) was widely prevalent. It was believed that *nazr-i-bad* causes considerable harm to persons, especially young ones. People had faith in evil spirits and it was supposed that children suffered under the influence of evil spirit. Many measures were adopted for guarding their children against evil spirits. Sometimes a small piece of skin of red deer was kept in house as charm against epileptic fits and also guard against the impact of evil spirits. People wore amulets on their arms for healing diseases and averting calamities[34]. Ibn batuta informs about a witch who was burnt alive for her incantation. He writes that a woman practicing such things was called *Kaftar*. One day one such woman was brought to him and people said that she had eaten the heart of a boy. He ordered them to take her to Sultan's lieutenant, who commanded that she should be burnt alive. When she was burnt her ashes were collected by the men and women of the town as they believed that anyone who fumigates himself with those ashes was safe against *Kaftar's* enchantments during that year[35].In the Himalayan region it was believed that the spirit of young men who died childless and women who happened to die in child-birth was supposed to haunt the village. It was believed that persons dying childless became *bhut* or *autar* and harassed his surviving relations unless appeased. For this purpose a *jantar* was worn by adults, made in th form of a tiny silver case containing a scroll supplied by a Brahman. An *autar* necklace of silver, with a human figure on it, was also commonly worn. A soap-nut kernel was also worn hanging from a string round the neck. An *autar* had to be appeased by goat sacrifice. Also in Himalayan region if one of two wives of a person died and her *churel* or spirit made the surviving wife ill, an image of deceased was made of stone and worshipped. A silver plate, stamped with a human image, called *chauki*, was also placed round the haunted survivor's neck. The spirit of a person who died by violence or by sudden death often became a cause of illness and death. Boils were believed to be due to them. Various diseases were supposed to be caused by witches either directly or indirectly through malevolent spirits under their control. Even cattle disease was ascribed to witchcraft, and even ravages of wild animals like leopards, hyenas, were believed to be due to witchcraft. Witchcraft was sometimes punished by

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34 B.N Luniya, op.cit. pp. 205,206.

35 Ibn Batuta, *Rehla*, Tr. H.A.R Gibb, New Delhi,1929, 2006, p 225.

law. For example; In Jammu when witchcraft was suspected the relatives of persons affected complained to a court or to a one who had power of detecting witches. Though the belief in witchcraft still survives, the detection of witches and all cruel practices associated with it are now illegal, and have been entirely discontinued. When sickness or calamity was believed to have been caused by any malevolent spirits, the sick person or someone for him went to the local chela who told them which spirit ought to be appeased, and acted as the medium of cure. This he professed to do with the help of godling whose chela who happens to be. All the diseases were called *opari*, that is, from supernatural influences-as distinct from those that were *sariri*, or connected with the body. According to a belief the recitation of 2 verses of Quran backward enabled a witch to take out a child's liver and eat it. A witch was believed not to die until she had taught charm to another woman, or if it could not happen then to a tree. Sorcerers wrote charms or spells on bit of a paper and split ink on it. Flowers were then placed on the young child's hands and he was asked to look into the ink and call the four guardians. When he reported that he had seen them he was told to ask them to clean the place and summon their king who was supposed to answer questions through him, but no one else saw or heard the spirits. Some witches were considered liver-eaters *jigar-khor*. But it was believed that she would not eat liver for two days after extraction, during which time she would be compelled by an exorcisor to replace it by an animal's liver. Virgins were specially requested to perform spells and charms[36]. In *Ain-i- Akbari* also there we find reference of *Liver- eaters* (*Jigar khor*) who by incantations could abstract man's liver and they also conveyed their knowledge to whomsoever they wished and the followers of this art were mostly women. They were believed to restore people to health by incantation or administering certain drugs[37].It was believed that evil spirits were very fond of fresh milk and when a child had taken milk the mother would usually put some salt in child's mouth to take away the smell. Spirits were also fond of scent of flowers and so it was considered dangerous for children and virgins to smell or wear them. Several disorders of children such as convulsions were ascribed to demons and most of the diseases were believed to be connected in some way with low castes, and so *Bhangis* and *Chuhras* were employed to

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[36] S.D.S Charak, op.cit.pp 79,81,86,94,96&97.

[37] Op.cit. *Ain-i-Akbari*, p.840.

exorcise them. If anything went wrong it was believed to be a mischief bewitched by the enemy by a process called *bandhana*, apparently through the agency of a spirit, and those skilled in combating magic by charms were generally called in to undo the mischief, but sometimes it could be removed without any such aid. For example; a dyer whose indigo had got spoilt (*nil-bitrna*) could make it regain its colour by relating gossip he had heard in a highly coloured form .People had firm belief in evil eye, and iron was used as a sole safeguard against it. Whenever a house was built, they use to keep an iron pot or an earthen vessel painted in black on the works. Evil spirits and fairies were believed to be attracted by fair complexioned children and so a black mark was put on child's forehead to keep them away, and also to protect them from the evil eye, this practice is still prevalent. A woman did not wash her head on Friday, or her brother could become sick. This was called *Gal-Lagdi*. Again a woman would not wash her head on Saturday or her husband would become sick. These superstitions are still believed in Jammu region.[38]

The superstitions of the people of Punjab were very numerous and complex. Among the masses in Punjab most of the deaths of children were ascribed primarily to the effect of evil eye or the influence of some evil spirit. Spiritual remedies were, therefore, sought before resorting to medical treatment. Bronchopneumonia was widely believed to be due to child's being possessed by some spirit of the prematorium which could be driven away only by a spell, chiefly known to the sweepers, charmers, '*Faqirs'* and '*Sadhus'*, who had a respectable place in the society. One of the anecdotes to the effect of the evil eye was to take three or seven chillies, wave round the head of the ailing child and throw them into the fire. If chillies produced the usual pungent smell the suspicion about the evil eye was unfounded, but if they left no smell the diagnosis was confirmed.

Amulets, the claws of a tiger, bear, and an owl, or other similar articles were hung round the child's neck in a black thread to ward off evil influence and black mark was usually made on the fore head every morning for the same purpose.

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[38] S.D.S Charak, op.cit.pp 79,81,86,94,96&97.

Sneezing was generally conducive to health, but if frequents, it was taken as the prognosis of some ailment, such as cold fever etc. Frequent sneezing also sometimes attributed to the evil eye, and if the child sneezed just before sucking, it was considered ominous for maternal uncle. Grinding of teeth augured some calamity to the parents or illness of the child. The remedy employed to stop the grinding of teeth was to put in the mouth of the child, while he/she was asleep some dust or sand usually taken from under the hinges of a door. A feather of the blue jay was sometimes tied round the neck or suspended from the ear of such ailing children. Hiccough was taken as a mark of good apetite and sound health of child[39].

The leaves of *bed-i-mushk* (a fragrant shrub) were thought to remove the evil effects of witch craft and sorcery. By observing *nisar utarna*, evil effects were neutralized. When emperor Mohammad Shah entered the palace after his victory at Hasanpur, the ladies of the harem received him at the gate and trays full of money were moved around his head and distributed among the poor. Recovery from illness and escape from any fatal accident, were the occasions for distribution of alms and charity. If on account of any imperceptible reason an infant vomited milk, *nazr* or *sadqa* was distributed among the poor to ward off the evil influence. There was a widespread belief that every disease was contagious. Therefore people avoided the company of diseased person. If any person was afflicted with fits, it was believed that the sick person was possessed by an unclean spirit[40].

There were many other superstitions pertaining to the cause of diseases and their cure. It was believed that in the primitive times when there was no lust and envy, people lived in peace and there were no diseases. With passage of time lust and envy came which was followed by wars, nature was altered with which diseases emerged. For example; In *Alberuni's India* book of Caraka is mentioned according to which, "In primeval times the earth was always fertile and healthy, and elements or *mahabhuta* were equally mixed. Men lived with each other in harmony and love, without any lust and ambition, hatred and envy, without anything that makes soul and body ill. But then came

39 Bakhsish Singh Nijjar, Punjab under Sultans (1000-1526 A.D), Delhi, 1968, pp. 163 and 164.
40 Mohammad Umar, op. cit. pp.436.

envy and lust followed. Driven by lust, they strove to hoard up, which was difficult to some, easy to others. All kinds of thoughts, labours and cares followed, and resulted in war, deceit and lying. The hearts of men were hardened, the natures were altered and became exposed to diseases, which seized to hold of men and made them neglect the worship of God and the persistence of science. Ignorance became deeply rooted, and the calamity became great. Then the pious met before their anchorite Krisa (?) the son of Atreya, and deliberated; where upon the sage ascended the mountain and threw himself on the earth. There after God taught him the science of medicine"[41].

Belief in astrology and horoscopes:

Indians were having belief in astronomy and horoscope which is still prevalent. According to them planets have considerable effect on the life of an individual. In *Alberuni's India* the nature of planets and everything else concerning them is given in tabular form. The column related to the month of pregnancy is completed by the remark that the Indians consider the eighth month as standing under the influence of horoscope which causes abortion. According to them, embryo takes, in this month, the five substances of the food. If it takes all of them and is then born, it will remain alive but if it is born before that, it will die from some deficiency in its formation. The ninth month stands under the influence of the moon, the tenth under that of the son. They don't speak of a longer duration of pregnancy, but if it happens to last longer, they believe that, during this time, some injury is brought about by the wind. At the time of the horoscope of abortion, which they determine by tradition, not by calculation, they observe the conditions and influences of the planets and give their decision accordingly as this or that planet happens to preside over the month in question[42]. Bernier writes about poor bazar-astrologers. These were commonly reported to be present with grandees in the court and were considered by them as eminent doctors, and thus became wealthy. Also; Bernier writes that whole Asia is degraded by the same superstition. Kings and nobles grant large salaries to these astrologers. He calls them crafty diviners who claimed to have knowledge of whatever is written in heaven and used to solve every doubt by opening

41 Abu- al-Rayḥ an Muḥ ammad (Alberuni), *Alberuni's India*, eng.tr. Edward.C.Sachau, 2 Vols, Vol 1, New Delhi, 1964, p. 382.

42 Ibid, vol2, pp. 213-216.

quran[43]. The Mughal court employed both Muslim and Hindu astrologers and astronomers. The Muslims in general consulted both Hindu and Muslim astrologers and astronomers[44]. Ruling class was also interested in these For example; Firoz Shah was interested in astronomy, believed in omens, auguries, amulets and charms[45]. In the book *The voyages of Thevenot and Careri* it is written that during Mughal reign astrology had an important position in the lives of common people. Even the ruling class did not undertake any work without the advice of astrologers[46]. These astrologers and astronomers enjoyed great prestige, status and influence. During the reign of Jahangir an astrologer was weighed against gold. The Mughal emperors did not normally undertake an important enterprise without consulting astrologers. Ahmad Shah postponed his march against Abul Mansur Khan Safdar jang, as astrologer had told him that it was not an auspicious day. The emperors and the nobles distributed large sums on the advice of astrologers to ward off misfortune. It is recorded that on 17th Sh'aban', 1119 (10th November 1707) Bahadur Shah made his first advance and gifts were distributed according to the advice of the astrologers attached to the court. Barren women and issueless persons used to consult astrologers and astronomers inquiring whether they would have any child[47].

Miscellaneous Superstitions:

There were many other superstitions which were prevalent in the medieval Indian society. In order to conceive a child women indulged in superstitious practices. For example; Manucci in his account writes that a woman wished to become with child, and not succeeding with drugs, had recourse to a magician. His orders were that at mid-night she should go and stand below a large forest tree which in India is called *badd*. It produces a small red fruit. Here she was to perform the sacrifice as to which he had

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[43] Francois Bernier, op.cit. p.245.
[44] Muhammad Umar, op.cit. pp. 433-435.
[45] Firoz Shah Tughlaq, *Futuhat-i-firozshahi*, Tr. Azra Alavi, New Delhi, 1996, p. 8.
[46] Thevenot and Careri, *India in seventeentn century: The voyage of Thevenot and careri*, Vol 2, , ed. J.P Guha, Newdelhi, 1976, p.298.
[47] Muhammad Umar, op.cit. pp. 433-435.

instructed her. She then became pregnant and the tree referred to became sterile, and never yielded fruit as long as it lived[48].

There were various superstitions related to cure of snake bite. For example; It was a Hindu custom when a man was bitten by venomous serpant, and there was no charmer present, they used to bind the bitten man on a bundle of reeds, and place on him a leaf on which according to them was written a blessing for that person which would accidently light upon him and save him by a charm from destruction[49]. Like Hindus, Muslims also believe in superstitions. As a cure for snake bite recitation of verses of Quran was done. A certain line of Quran was read out on the water thrice and it was considered a good sign if person suffering from snake bite could sip that[50]. Also people used to call snake charmers when a person was bitten by snake and they demanded huge sums of money. The snake charmer used to chant few words and the snake came and started sucking the poison from the wound. After that the snake returned back, the patient recovered[51]. But this was only a superstition, as most of the snakes are not poisonous to humans[52]. The snake bite cannot be necessarily harmful always. It’s fatal only if the quantity of poison injected into the body of the victim is above the threshold level. It is only the psychological fear that leads nervousness and sometimes the heart failure becoming a cause of death[53].

It was believed that moon affects the humors of sick people and that the fever days resolve parallel with moon’s course. Physicians also had belief in it. [54] Also; when one was laid up with fever with cold, several superstitious practices were observed; Some people ate the leaves of Pipal tree, some ate bugs with molasses, while others breathed in smoke of straw. Somewhere the leaves of pipal tree were burnt and someone embraced the pipal tree. If on account of any imperceptible reason an infant vomited milk, *nazr* or *sadqa* was distributed among the poor to ward off the evil influence. There was

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48 Niccolo Manucci, *Storio Do Mogor* (1653-1708), Vol III, Eng. tr. William Irvine, London,1907,Reprint Calcutta, 1966, p. 189.
49 Alberuni, vol 1,op.cit. p. 194.
50 B.N Luniya, op.cit. pp. 205,206.
51 Shihab al-Din al Umri, *Masalik al absar fi-mamalik al amsar*, Eng tr. Iqtedar Husain Siddiqi, Aligarh, n.d.
52 R.L Kotpal, *Vertiberates*, Meerut, 2009, p. 323.
53 Shukla and Upadhyaya, *Economic Zoology*,Meerut, 2011, p. 296.
54 Alberuni, vol1, op.cit. p. 347.

widespread belief that every disease was contagious. Therefore people avoided the company of diseased person[55]. Hindus used to venerate oxen and drink their urine to obtain blessing and for a cure when the fall sick[56]. Sometimes breath of a holy person was believed to cure some ailments; For example; During Akbar's reign Fath khan, the leopard keeper was in despair about an illness of his eyes. Becoming hopeless about the physicians he had recourse to supplications and Akbar cured him by breathing on him with his *Messiah* like breath[57].

About small pox, it was a belief among some Hindus that small-pox was a wind blowing from the island of Lanka towards the continent to carry off souls. Some men used to warn people before hand of blowing of this wind, and could exactly tell at what times it would reach different parts of the country. After small pox had broken out, they recognized from certain signs whether it was virulent or not. Against the virulent small pox they used a method of treatment by which they destroyed only one single limb of the body, but did not kill. They used cloves as medicine. If these precautions were taken, it was believed that nine people out of ten would be proof against this malady[58].

According to Alberuni it was a belief among Hindus that Brahmans used to suffer from eating cow's meat. For their country was hot and the inner parts of the bodies are cold, the natural warmth being feeble in them and power of digestion was also weak in them. So they forbade eating cow's meat as it was essentially thick and cold[59]. Further Bernier has also written that in India it was believed in India that nothing is more harmful for a sick person than meat broth[60].

People had belief in *jogis* also. In the book of Thevenot and Careri *jogis* are described as the people of all tribes who had imposed on themselves most painful way of life. They used to be continually naked. Some of them held their arms in the air, without ever letting them down; others used to hold them behind, till in the time, they could not move them. Some used to hang themselves up with ropes. Others closed their mouths

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55 Muhammad Umar, op.cit. p.436.
56 Ibn Batuta, Rehla, Eng.Tr. Hamilton Gibb, *The travels of Ibn batuta*, Cambridge, 1971, p.648.
57 Abul Fazl, *Akbarnama*, Vol 3, Eng tr. H. Beveridge, New Delhi, 1973, p. 298.
58 Alberuni, Vol 1, op.cit., p.399.
59 Ibid, Vol 2, p.152.
60 Bernier, op.cit. p. 338.

with padlocks, so that they must be fed with liquids; others used to run iron-ring through their prepuce, and hung a bell to it. The barren women believed that by touching them, they would become fertile.[61]

At times it was believed that devotion of someone's most precious thing could save a diseased person's life; for example when Humayun got a violent attack of fever and when medical skill failed to cure him then Babur prayed to God to save Humayun's life in exchange for his own life and while his prayers fever surged over him and he himself fell ill on that very day, he was on bed for two or three months after which he died[62].

There was a clash between the medical system and theologians and those who saw medicine as cultural system of belief embedded in *Quran* and *Hadith* (traditions of prophet).As Islamic mysticism grew in popularity and respectability in later Abbasid caliphate, its thinkers attributed healing powers to saints and shrines and questioned the claims of medicine. For instance; the prominent sufi thinker Al-Ghazali of twelfth century was staunch critic of medicine[63].

O.P Jaggi in his "*Folk medicine*" writes about the superstitious practices of the tribal people still in vogue. Death from infectious diseases is seldom followed by cremation, and the path through which the corpse is carried is strewn with thorns and grains charged with magical formulas so that the departed soul could not come back as an evil spirit, and harm those it had left behind. Only a few diseases are ascribed to natural causes; for example syphilis and gonorrhea.[64]All the rest are believed to be caused by supernatural agencies like wrath of goddesses and evil spirits. When goddesses are not given due recognition they get angry and their wrath cause disease and death among men. For the wrath of a goddess the example is the causation of small pox by Sitala mata. Likewise Cholera is believed to be caused by *Mata Marai* or some other enraged goddess. At the time of this epidemic, "*bida* ceremony", a farewell to the goddess is

[61] Thevenot and Careri, op.cit. p. 313.
[62] Babur, *Baburnama*, eng. tr. S. Beveridge, Delhi, 1970,p. 701.
[63] Seema Alavi, *Islam and healing ,Loss and recovery of Indo Muslim Medical tradition (1600-1900*), Delhi, 2007, p.25
[64] Syphilis and gonorrhea are sexually transmitted diseases caused by *Trponema pallidum* and *Neisseria gonorrhoeae* respectively.

performed, which is conducted by medicine-men. He first tries to find out whether the performance of the *bida* rite would be acceptable to the goddess. This is important otherwise the goddess will get more enraged and kill more people. Belief in evil spirits is still prevalent. Evil spirits are believed to cause disease death and destruction. Sacrifices are made to propitiate and appease them. It is the fear not devotion that is the basis of worship. If they can't be avoided by sacrificial offers, magical practices are used, For example; Propitiation, driving them away and exorcism. Tribal medicine men who are acquainted with such practices uses various means to drive away the evil spirits. Diseases are also believed to be caused by sorcery. In this the sorcerer obtains something from the victim's body such as; nail, hair, excrements, cloths, food or even the earth over which he has walked. He utters incantations over these objects and the person is at once attacked with disease. Among other superstitious beliefs among tribals still prevalent is that if a woman does not give birth to the child, there are several procedures available to cure her. She is advised by medicine-men to put fire to five or seven houses, or hay stacks. The excitement over the fire is believed to make a barren woman capable of conception. The belief prevails in villages in many parts of India and is one of the causes of frequent fires. Another method is to offer coconuts under a sacred pipal tree (*Ficus religiosa*), or to hang a miniature *palang* (bedstead) in its branches or to place it under the tree. Some barren women try to get hold of a cloth which has been soiled by menstrual blood of a woman who has children of her own, burn it and swallow the ashes. This is believed to pass the fecundity of other women over them. Some women secretly obtain possession of umbilical cord of a new born baby and eat a piece of it. It is believed the child whose umbilical cord is eaten would die and its spirit will be reborn in the barren women who swallowed its umbilical cord. There are superstitions about difficult and delayed labour. In such case a hole in the roof is mad. A virgin girl brings water from the river, and this is passed from hand to hand along the line of men and thus up to the roof. The woman in labour stands beneath, and three mouthfuls are poured into her mouth. In another method the wood of a tree struck by lightning is set afire and the woman is warmed with it. Or if there is a gun in the village, the medicine –man brings it washes the barrel with water. This he gives to the woman to drink. If there is no gun, she herself washes the inside of her husband's feet and drinks the water. There are many other

superstitions associated with prediction of sex of an unborn child, different ways promoting lactation etc.[65]

Thus it can be concluded that superstitious beliefs regarding the cause and cure of various diseases were prevalent since ancient times. In medieval India also there were regional variations in myths and superstitions regarding cause and cure of diseases. Though there has been a continuous progress in the ways of curing various ailments through development of different systems of medicine, but these beliefs are still ingrained in the minds of people and have passed on from generation to generation.

65 O.P Jaggi, Vol. 3, op.cit. pp. 35-159.

CHAPTER – 3

Chapter-3

Alchemy and its Relation with Medical Science

Alchemy is an Arabic word which is believed to be derived from Egyptian *kem-it* (the black) or from the Greek *chyma* (the molten metal). Alchemy, the fore runner of modern chemistry was a belief system with two important characteristics; one was that the transmutation of inferior metals like lead, tin or copper into the noblest metal, gold and the other was the preparation of the so called elexir of life for attaining longevity or immortality. The concept behind this was that if lower metals could be transmuted into gold of everlasting lusture, the perishable body too could be transformed into the immortal state[1]. The alchemy was thus characterized by dual objective; perfection of metal and perfection of man. Gold was regarded as perfect metal because of its bright yellow colour which did not tarnish by fire and other agents easily[2]. Rasayana is the Sanskrit word elixir. *Rasayana* or Indian alchemy is made of two words '*rasa*' and '*ayana*'. The word '*rasa'* has several meanings in different contexts. In one context it means the first of the seven body tissues (*dhatus*). In another context it means the juice extracted from fresh part of a plant while in pharmacology the taste of given material is called '*rasa'*. '*Ayana'* means movement, knowledge and accomplishment. Thus *Rasayana* means circulation of rasa. It may also be defined as the accomplishment of the benefit of well-developed *rasa* and other *dhatus*.In Ayurveda it is defined as the way of achieving long life and boosting up memory[3].In the alchemical literature word rasa generally means mercury, which together with sulphur and mica is central to whole Indian chemical thought[4].

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1 D.P Chattopadhyaya, *History of science philosophy and culture in Indian civilization*, Vol 4, Part 1, *Chemistry and Chemical techniques in India*, ed. B.V Subarayappa, New Delhi, 1999, Rept. 2004, pp. 263 & 266.

2 Priyadaranjan Ray, Origin and tradition of Alchemy, *Indian journal of history of science*, Vol 2(1), Calcutta, 1967, pp.1-21.

3 D.P Chattopadhyaya, *History of science, philosophy and culture in Indian Civilization*, Vol 4, Part 2, *Medicine and Life Sciences in India*, ed. B.V Subbarayappa, New Delhi, 2001, p.254.

4 B.V Subbarayappa, *India's contribution to history of science in India's Contribution to world thought and culture*, ed. Lokesh Chandra et al, Madras, 1970, p. 62.

Origin, History and Development:

Alchemy had independent origin in different countries like Egypt, China, India and European countries, though there had been an exchange of ideas between them. Priyadaranjan Ray giving the reference of various fragmentary records writes that Greeks were well acquainted with the knowledge of metallurgical operations, preparation of alloys, lacquering and varnishing of metals etc. but nothing about transmutation of metals was found. During 5^{th} and 4^{th} century B.C Greek physicians and thinkers travelled to the eastern centres of learning like Persia and Mesopotamia and came across with the ideas of astrology, astronomy and philosophical sciences. They also met the visiting scholars from India, Central Asia and China from whom ideas from this subject became known to them. The new ideas were brought back to Greece and thus a suitable breeding ground for the development of alchemy was created. In the Greeco-Alexandrian centres of learning the ideas of alchemy were developed by the followers of a mystic cult. Between first and third century A.D, at Alexandria a mysterious cult arose mainly from Egyptian priesthood. The followers of this cult developed certain unbelievable ideas regarding possible transmutation of metals which led to growth of alchemy in practice.

There is another view that holds that alchemy had its origin in China. According to Chinese sources alchemy was first practiced in China in 4^{th} century B.C. It was considered that eating and drinking in gold vessels prolong a man's life and enable him to attain immortality. The Chinese alchemists were mostly followers of Lao-Tzu 4^{th} century B.C.), who was the founder of Taoism. According to Taoism all substances are made of *Yang* and *Yin*[5]. Substances that are rich in yang impart longevity and life e.g. Cinnabar, sulphur and gold. Alchemical gold was described as divine or esoteric drug of immortality (elixir of life). The Chinese alchemists mostly experimented upon conversion of Cinnabar into gold, as both contained yang in large number. The idea of Philosopher's stone is believed to be of Chinese origin. The Chinese alchemists declared the necessity of adding a catalyst (elixir) for effecting transmutation.

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[5] According to Chinese philosophy and religion yang is positive, bright and masculine and yin is negative, dark and feminine.

The Arabs learnt Alchemy from Greeks. When the Nestorian and other Christians on their expulsion from Constantinople migrated to and settled in Syria and Persia and formed at these places an active centre of Greek learning. Syria in those days was the meeting ground of many cultures and languages: Greek, Latin, Syriac, & Persian and Arabic after the rise of Islam. Many Greek works of philosophy and science were translated into Arabic under Abbasid Caliphs of Baghdad. The Arabs began to take interest in learning and translated many Greek words from their Syriac version into Arabic. Alchemical books formed a large number of them. It is also well known that under the patronage of Caliph Harun-al-Rashid many Indian treatises on medicine, astronomy, astrology, mathematics and philosophy were also translated from Sanskrit into Arabic. Arabian alchemy had therefore its roots in Greek alchemy and also got some nourishment from Indian and Chinese sources[6]. Arabs learnt a lot from Indians. During the reign of Khalifs Mansur and Harun, the Indian Pandits went to Baghdad at their invitation and translated Caraka, Susruta and many other medical treatises[7]. The most prominent name among Arabian alchemists is that of Jabir b. Hayyan (Gaber in Latin) who flourished during 720-813 A.D.

The basic ideas of European alchemy were mostly Greek and Arabic in origin and were concerned more or less with the making of gold.

In India the origin of alchemy can be traced back to the Vedic age. Medicinal plants are classified into two categories according to Atharvaveda; *ayusani* (promoting longevity) and *bhaisajyani* (curing diseases). In the Ayurvedic period the term *ayusani* gave place to *Rasayana*. Therefore Rasayana represents drugs which improve the circulation of body fluids and thus helps in prolongation of life[8].The Vedic people had a strong appeal for gold and for an exhilarating drink called *soma*. Both were exalted to a divine position. The *Atharvaveda* mentions about gold as a heavenly blessing which confers longevity on a person who wears it. *Soma rasa* according to *Rig-veda* was drink of immortal gods. The extraction of juice of soma was itself an elaborate ritual. It was offered to the gods by priests. *Soma rasa* like gold was also considered to bring

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6 Op.cit. Priyadaranjan Ray, pp. 1-21.

7 D.P Chattopadhyaya, *Studies in the History of science in India*, Vol1,New Delhi, 1992, p.347.

8 Op.cit. Priyadaranjan Ray, pp. 1-21.

immortality[9]. Taking into account the process of ageing which leads to the decrease in vigour and consequently death, both *Susruta* and *Charaka Samhita* have dealt with *vajikarna* (increasing the virile power) and *rasayana* (increasing longevity). In order to deal with these to problems, certain practical procedures and compositions have been mentioned in thse texts; Forexample, *Charak samhita* describes certain processes and recipes which give strength to body and give longevity of about 1000 years and that too without any ailment. *Soma* as an elixir which increases the longevity has also been mentioned in *Susruta samhita*[10].According to Charaka, Ayurveda consisted of 8 parts, and one them being Rasayana. The eight parts of Ayurveda are;

1. *Kayacikitsa* or therapeutics
2. *Salakya* or the science of special diseases of eye, nose, ears, mouth, throat etc.
3. *Salyapahartrka* or surgery.
4. *Visagara vairodhikaprasamana* or toxicology.
5. *Bhutavidya or Psychiatric knowledge*.
6. *Rasayana or rejuvenation*.
7. *Kumarbhrtya* or pediatrics.
8. *Vajikarana* or knowledge of increasing virility[11].

In the later ages, *Tantric* treatises mention about it as a general term for mercurial drugs having the power to promote vitality and longevity. During this period *rasa* came to signify mercury. On the period of decline of Buddhism, alchemy as an integral part of tantric cult came into vogue and dominated the Indian society for several centuries from 700-1300 A.D. Its followers were both Hindus and Buddhists. The *tantras* offered an easy path of liberation through the performance of certain rituals and for the

9 Op.cit. D.P Chattopadhyaya, Vol4, Part 1, pp. 263 & 266.
10 Ibid. p. 268.
11 D.P Chattopadhyaya, *History of science , philosophy and culture in Indian civilization*, Vol3, part1, *History of Indian science technology and culture*, ed. A. Rehman, New Delhi, 2000, Rept. 2001, p. 154.

accomplishment of these rituals, the preservation of body in a healthy state was considered essential. In order to attain this objective the use of mercury and its preparation, yogic breathing and exercises as well as use of gold prepared by transmutation of base metals were recommended. The tantric cult is thus characterized by an admixture of alchemy, spells, incantations, magic, superstitious beliefs, and rites on one hand and speculative, metaphysical and esoteric phases of spiritual aspirations on the other. All these are centred on worship of Shiva and Parvati in tantric treatises of Hindu origin and Buddha, Avalokitesvara and Tara Prajanaparamita in case of Buddhist authers. Thus it is quite evident that alchemy had its origin and growth in religious mysticism. Alchemy in India kept on developing in medieval period also. Alberuni who came to India with Mehmud of Ghazni wrote about contemporary culture, tradition and customs of India in his book *Kitab-al-hind*. Taking reference from the book of Patanjali, Alberuni writes that Patanjali divides the path of liberation into three parts; first, *krya-yoga* or habituating the senses in a gentle way to detach themselves from external world, second renunciation and third worship. He then adds the fourth one to these three; that is *rasayana* which consist of alchemistic tricks with various drugs intended to realize things which by nature are impossible. Alberuni further compares alchemy with 'witchcraft'. Alberuni writes, "What would you call this but a piece of witchcraft? It is quite the same as if he were to take a bit of silver and make it appear as gold, only with this difference, that the latter is a generally-known process, i.e. the gilding of silver, the former is not"[12]. Jahangir in his *Tuzuk-i-Jahangiri* mentions about alchemist's stone (*sang-i-paras*). Jahangir writes that at Mandu before the reign of Bikramjit there was a raja of same name. In his time a man had gone into fields to bring grass. While he was cutting it, the sickle had been transmuted; he took it to the black smith to get it repaired. The blacksmith knew that the sickle had been turned into gold. It was already known at that time that there was a stone called *sang-i-paras* or alchemists stone by contact with which iron and copper turn into gold. But Jahangir writes that did not believe these stories as it was not written in any book[13]. Colonel Jarret in his translation of *Ain-i-Akbari* has also

12 Abu- al-Rayḥan Muḥammad (Alberuni), *Alberuni's India*, eng.tr. Edward.C.Sachau, 2 Vols combined, Vol 1, New Delhi, 1964, pp.76, 187.

13 Jahangir, *Tuzuk-i-Jahangiri*, 2Vols, Vol 1, Eng. tr. Alexander Rogers. Ed. H. Beveridge, Delhi, 1989, pp.364, 365.

written about this stone which is produced by fusing different metals and calls it philospher's stone or the elixir[14]. S. Mahdi Hasan writes that the origin of Indian medical system can be attributed to a class of ascetics who lived like exiles in forests and needed a drug of rejuvenation or at least one that could keep them strong and active enough to search food –stuffs for themselves in the forest. They lived on hope of discovering remedy for infirmity and old age. While searching they came across different herbs and thus by chance they became the founders of herbalism which was original medicinal system of India[15]. In medieval India Sufis also played an important role in the introduction of Islamic alchemy in India. Sufis contributed to the development of Islamic pharmacology in India which is closely related to the alchemical practice. Treatises on alchemy and pharmacology show the interest of Sufis in these fields[16]. For example; *Haft-ahbab* which is an alchemical treatise attributed to famous *Suharwardi* saint Qadi Hamid al Din Nagawri and his six companions which contains various iatro-chemical prescriptions[17]. In medieval India one of the order of wandering monks was the *Nath Siddhas*[18]. These monks enjoyed a reputation as alchemists in this period. As these monks used to travel from place to place and thus contributed to its spread throughout India. They wrote works many on alchemy. But their works were not in Sanskrit but in the popular speech of that time. That's why much of their alchemical works are not extant today[19]. Abul Fazl writes that Akbar had learned Alchemy from some Jogis and even showed in public some gold made by him[20]. This shows the curiosity of Mughal rulers in acquiring the knowledge of alchemy Alberuni has written that there was hardly any country at that time that did not knew this art. This means that there was a global awareness of this art[21]. Indian alchemy had its influence in Arabia and subsequently in

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14 Abul Fazl, *Ain-i-Akbari*, Vol2, Eng. tr. Colonel H.S Jarret, Delhi, 1989, p.253.

15 S. Mahdi Hassan, *Indian Alchemy or Rasayana in light of Asceticism and Geriatrics*, New Delhi, 1979, pp. 16,17.

16 S. Mujahid Khan, The transmission of Medical and Scientific Knowledge among Indian Sufis, *Central India Journal of Historical and Archaeological Research*, 3(9), Neemuch(M.P), 2014, pp. 148-152.

17 Fabrizio Speziale, The Relation between Galenic Medicine and Sufism in India during the Delhi and Deccan Sultanates, *East and West*, Vol53 (1/4), Rome(Itly), 2003, pp. 149-178.

18 The Nath cult probably originated in Bengal but spread to other parts of North India during 12th and 13th centuries. Among the well-known masters of the cult were Matsyandra Nath and Gorak Nath.

19 David Gordon White, *The Alchemical Body: Siddha traditions in Medieval India*, Chicago, 1996, p. 56.

20 Abul Fazl, *Ain-i-Akbari*, Vol1,Eng. tr. H.Blochmann, Delhi, 1989, p.210.

21 Op.cit. Alberuni, p. 187.

west. Referring to Tamil alchemical texts B.V Subarayappa writes that one of the reputed alchemists named Ramadevar says in one of his works that he visited Arabia and assumed the name of Yakub and taught alchemy there[22].

Benefits and Types of Rasayana:

About the benefits of *Rasayana*, Alberuni has written, "its principles restore the health of those who were ill beyond hope, and give back youth to fading old age, so that people become again what they were in the age near puberty; white hair become black again, the keenness of senses is restored as well as the capacity for juvenile agility, and even for cohabitation and life of the people in this world is extended to a long period"[23]. Rasayana was believed to control premature ageing, weakness, disease and even death. Thus through Rasayana benefits to be achieved were; prolongation of life, boosting memory and intelligence, regulating immunity against diseases, keeping up a youthful state , improving complexion and voice, enhancing body strength and strength of sense organs etc[24]. *Susruta Samhita* mentions about the treatment of diseases of ear generally by the practicing *rasayana*[25].

According to Ayurvedic texts two types of Rasayana were practiced. 1) *Kuti Pravesika* 2) *Vatatapika*

1) *Kuti Pravesika*: It was undertaken in a specially built three chambered (concentric) house. By this method every cell of the body gets rejuvenated. It is designed on the basis of first state of life in mother's womb.

2) *Vatatapika*: This method was for those who who found it impossible to undergo the first method because of its strict rules. In this method one was exposed to sun and wind during Rasayana therapy[26].

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22 Op.cit. B.V Subbarayyapa, p.63.
23 Op.cit. Alberuni, p. 188.
24 Op.cit. D.P Chattopadhyaya, Vol4, Part 2, pp. 253 & 254.
25 Susruta, *Susruta Samhita*, Vol 3,ed. Kaviraj Kunja lal Bhishagratna, Calcutta, 1916, p.109.
26 Ibid. p. 255.

Material and Process:

During medieval period alchemists were busy in their activities. In order to develop new methods they used earlier knowledge of metals, minerals and plant materials as well as their own experience[27].Taking reference from various texts on Indian Alchemy (*rasavidya*) it gets revealed that in alchemy different types of inorganic substances such as; minerals including gems and metals and organic substances which include plant as well as animal products were used but it was inorganic products that were largely used[28].Among the metals most frequently used were gold, silver, iron, lead, copper, zinc, tin and mercury. Besides these arsenic, sulphur, orpiment (arsenous sulphide, As_2S_2), realgar (arsenic sulphide, As_2S_3) and cinnabar (mercuric sulphide Hg_2S_2) were also used[29].The important minerals were generally called *rasas* which were further divided into *maha (*superior) and *upa* (subsidiary*) rasas*. The metals were called *dhatus*. Although mercury is a metal but it was considered*maharasa*, the king of *rasas*. In the alchemical texts it is mentioned by various names like; *parada*, *sita*, *rasendra*, *svarnakaraka* (maker of gold), *sarvadhatupati*, *Sivaja* (born of Siva), *Siva virya* (semen of Siva) and *Harabija* (seed of Siva).The *maharasas* (which were eight in number according to the alchemical texts) and the *uparasas* are given in the table below[30].

Maharasas	***Uparasas***
• *Abhra* (mica) • *Vaikranta* (kimberlite dust) • *Maksika* (pyrites) • *Vimala* (chaleo pyrites) • *Adrija* (bitumen) • *Sasyaka* (copper sulphate or compound of copper) • *Capala* (zinc-carbonate)	• *Gandaka* (sulphur) • *Gairika* (haemitite or red ochre) • *Kasisa* (iron compound) • *Kamksi* or *tutha* (alum) • *Talaka* (orpiment or arsenic trisulphide) • *Anjana* (stibinite or antimony compound) • *Kankustha* (?)

27 Op.cit. D.P Chattopadhyaya, Vol3, Part 1, p.156.
28 Op.cit. D.P Chattopadhyaya, Vol4, Part 2, p. 272
29 Op.cit. D.P Chattopadhyaya, Vol3, Part 1, p.156.
30 Op.cit. D.P Chattopadhyaya, Vol4, Part 2, p. 272.

In some texts *Kankusta* is omitted and *darada* (cinnabar)&*kanta* (lead stone) are included in *maharasas*, The metals which have been mentioned in *rasashastra* texts are gold, silver, copper, & iron which are considered pure while lead and tin are considered as odorous (*puti*). In the alchemical texts various plants have been mentioned some of which have medicinal value. The roots, leaves or seeds of these plants aid indigestion. According to Alberuni most of the medicines prepared in *Rasayana*were from plant sources[31].Regarding animal products, their excreta, flesh or some other parts of their bodies were processed and used but comparatively the use of metals and minerals in alchemy was more pronounced. According to *rasavadins* minerals and metals couldn't give desired alchemical properties unless they were treated or digested with some medicinal plant. Even mercury that was considered the king of *rasas* had to undergo treatment with different plants[32]. It was solidified using plant juices, metals and sulphur. Gold was also used in preparing a variety of medicines[33]. Various methods of preparing compounds of mercury having medicinal value were developed by the alchemists. They had to pay a considerable attention to the purification of mercury and sulphur before their compounds were prepared. As according to the alchemical texts if the compounds of mercury were prepared from impure substances, mercury becomes unfit for *rasayana*. The compounds of mercury having medicinal value were; *rasasindura* (pinkish red mercuric sulphide), *kajjali* (black mercuric sulphide), *rasakarpura* (corrosive sublimate or mercuric chloride) and *makaradhvaja* (a combination of mercuric sulphide with stimulants, gold etc.).*Rasavadins* also laid the foundation of preparing *bhasmas* (incinerated and finely powdered form) which are still being used by the practitioners of Ayurvedic and Siddha systems of medicine. The alchemical texts have given the details of processes for the preparation of different types of *bhasmas*. In the preparation of bhasmas the desired substance is heated for a long period which plays an important role in obtaining an effective product of fine particle size. Some of the *bhasmas* prepared by *rasavadins* showing their experimental skills are:

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31 Op.cit. Alberuni, 2Vols, Vol1, ed. Edward.C.Sachau, New Delhi, 1989, p.187.
32 Op.cit. D.P Chattopadhyaya, Vol4, Part 1, p. 272.
33 Op.cit.D.P Chattopadhyaya, Vol3, part1, pp. 150,151.

Gold *bhasma*: In this thin gold leaves were to be coated with a paste made of mercuric sulphide and the juice of custard lime, dried and incinerated. This process was to be repeated ten times, after which *bhasma* could be used as medicine. It could also be prepared by a process that involved cinnabar, sulphur, realgar and sal ammoniac (ammonium chloride) as well as gold and citrus juice.

Silver *bhasma*: One method of preparing this was that silver foils were to be coated on both sides with *kajali* prepared from mercury and sulphur, and ground in citrus juice. These were dried and powdered sulphur was spread over them above and below. These were then placed between two earthen plates, sealed and heated in a sand-bath for a day, over a strong fire. When it got cold, the product was mixed with powdered pyrites in equal quantities and ground well with lime juice and then heated for a long time till the silver was reduced to its bhasma form.

Copper bhasma: It was prepared by keeping copper leaves immersed in cow's urine for 15 hours and then taken out. Copper leaves are placed in the paste of Cangeri (*oxalis corniculata*) and *kajali* (prepared from mercury and sulphur) is also put in it. The pot was closed with lid and heated on high flame for three hours. After cooling it, the mass is powdered and thus the product called copper bhasma became ready for use.

Lead *bhasma*: For its preparation mercury was added to molten lead along with barks of *arjuna* (*Terminalia arjuna*), *vibhitaki* (*Terminalia belerica*), *asvagandha* (*Withania somnifera*), pomegranate and *apamarga* (*Achyrantches aspera*). These were heated together for 21 nights, all along constantly stirring by an iron ladle. The product obtained is finely powdered. According to alchemical texts lead *bhasma* was excellent for *rasayana* therapy.

Tin *bhasma*:In this thin leaves of tin were coated with a paste of orpiment (arsenic sulphide) and latex of *arka* (*Calotropis gigantea*). The tin leaves with this coating were dried and placed in a crucible. The alkalies prepared from barks of peepal and tamarind trees were placed over them and incinerated. The finely powdered product tin *bhasma* was thus obtained.

Other *bhasmas*: Besides these bhasmas there were other *bhasmas* like the brass *bhasma*, *bhasmas* of iron, steel etc.[34]

Alchemsits kept on doing experiments till desired result was obtained by combination of different metals salts and plant products. Also experiments were repeated till the alchemists become acquainted with the right proportion of ingredients to be used, type of fuel, adequate supply of heat and reaction period[35]. Since different experiments were performed with different metals in alchemy, another science developed on parallel lines with it, and that was metallurgy. Infact the three practices of metallurgy, alchemy and medicine were interlinked and interdependent. Alchemy developed considerably in medieval period by borrowing from earlier metallurgical, botanical and medical knowledge[36]. The Indians are considered the first to extract zinc from its ore calamine (Sanskrit- *rasaka*)[37]. The historic remnants of Iron Piller at Delhi and copper statute of Buddha found at Sultanganj in Bihar show the advancement in metallurgical practices in ancient India[38]. Metals and their alloys were used for ornamental and decorative purposes. Metals were also used for making canons. In Mughal India copper vessels coated with tin were used in the household.[39] Abul Fazl writes in *Ain-i-Akbari* that the *sayrafis* were well experienced and could tell the degree of fineness or brightness of metal. Abul Fazl has also written about methods of refining of gold & silver, method of separating silver from gold and the method of extracting silver from ashes. This shows the metallurgy had become an important industry in Mughal India[40].

About Alchemists or Rasavadins:

Rasavadins or alchemists used to be skilled experimentalists. There were certain qualities which were considered essential for the alchemists. These were faith in alchemy, honesty, self-control, sincerity of purpose and expertise in the field of metals, minerals

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34 Op.cit. D.P Chattopadhyaya, Vol4, Part 1, p.281 & 282.
35 Op.cit. D.P Chattopadhyaya, Vol3, part1, p.157.
36 Ibid.p. 162.
37 Op.cit. D.P Chattopadhyaya, *Studies in the history of science in India*, p. 359.
38 Op.cit B.V Subbarayappa, p. 64.
39 K.P Bahadur, *A history of Indian Civilization*, Vol 2, Part 2, New Delhi, 1980, p. 345.
40 Op.cit. Abul Fazl, Vol.1, p. 19-27.

and herbs[41].Alberuni has written about Nagarjuna who was a famous representative of this art and had lived nearly a hundred years before his (Alberuni's) time. Nagarjuna was a native of fort Daihak near Somnath. He was well adept in this art and also wrote a book on it. Alberuni has also written about Vyadi (in the time of Vikramaditya) who spent both his life and property in practicing this art and his misunderstanding of a prescription of a medicine which meant oil and human blood and was written as *raktamala* and he took it as *red myrobalanon* and as such it had no affect when he used it. One day his head struck with a peg projecting from the roof and the blood that oozed out got mixed with the oil that he used over his skull and when he looked downwards due to pain, the blood mixed with oil fell into the cauldron without being noticed by him. When he and his wife besmeared began to try the concoction and besmeared their bodies with that, they both flew up in the air. When Vikramaditya came to see them after hearing this, the man shouted to him "Open thy mouth for my saliva". The king got angry and did not do it. The saliva fell down near the door and the threshold was filled with gold. Vyadi and his wife flew to any place they liked. He also composed famous books on this science. There are few more instances about this art mentioned by Alberuni . Further Alberuni has written that the Hindu princes were so much greedy for gold making that even if they were asked to kill number of little children for this, he would not refuse it[42].In medieval India also we get references about many eminent personalities who were well adept in this art.During the reign of Jalaluddin khilji, Siddi Maula knew the science of alchemy[43].Many intellectual people involved themselves in this science and were busy in doing experiments[44].During the reign of Humayun Shaikh Nasiruddin was well acquainted with the science of alchemy. Badaoni has written that when Humayun was defeated in the battle of Chausa, the Shaikh said to Humayun that something was to be done for the maintainance of fresh army and accordingly he converted copper pots, dishes and other vessels into pure gold in the emperor's presence. When Badaoni enquired about his art from his sons, they said a darvish had given their father a basket full of some ingredients necessary for the transmutation process of the baser metals and when these

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41 Op.cit. D.P Chattopadhyaya, vol4, part 1, p. 273.

42 Op.cit. Alberuni, 2Vols, Vol1, pp.189, 190, 191.

43 Mahomed Qasim Ferishta, *History of the rise of Mahomedan power in India*, Vol1, Eng. tr. John Briggs, London, 1829, Reprint Calcutta, 1908, reprint , Calcutta, 1966, p.167.

44 Op.cit. Alberuni, 2Vols, Vol1, p. 187 &188.

were applied to any copper object, the desired result was obtained[45]. Abul Fazl writes about Raja Jaluka who on his return from Kannauj, the then capital of Kannauj brought with him a number of learned and enlightened men. Out of them he selected the seven most worthy; one of whom was an alchemist who performed extra-ordinary feats and sometimes he appeared as an old man and other times a youthful[46]. Manucci has written about Amanat Khan (the governor of Surat during Aurangzeb's reign) who spent a lot of money in practice of Alchemy. He invited Manucci also to join him in such matters but Manucci did not agree and told him, he was spending uselessly both money and time but these words didn't affect him and he constantly renewed his experiments. This shows the urge of alchemists to excel in this art[47].Those who were unfamiliar with this used to ridicule this art and its practitioners. The people who knew this art usually did not disclose it[48]. *Rasaratnasamuccaya* mentions 27 famous alchemists and all of them were supposed to preserve this art and keep it secret. All the new entrants to this art were to undergo initiation into the secretive mercurial science by these 27 alchemists. The new entrants had to keep the *rasavidya* closely guarded secret[49]. During Sikandar Lodhi's reign, Mian Taha who was expert in alchemy and used to make silver and gold was forbidden by Khwajgi[50] by making him take an oath that he would not practice it[51].

Laboratories, Instruments:

The *rasavadins* also set up their laboratories called *rasasala*. In these laboratories different apparatus, appliances, instruments for heating, steaming, distilling etc. were kept. The laboratory was to be erected in a place rich in medicinal herbs. It had to be spacious, furnished with four doors and decorated with portraits of divine beings. The apparatus included *kosthi* (for the extraction of essences), pair of bellows, pestle and mortar, sieves of varying degrees of fineness, earthen material for crucibles of various types, dried cow dung cakes for heating purposes, retorts of glass, iron pans, conch-shells

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45 Al Badaoni, *Muntakhabut twarikh*, Vol3, Eng tr. T.Wolseley Haig, Delhi, 1899, rept. 1973, p.161.
46 Op.cit. Abul Fazl, Vol2, p. 377.
47 Niccolao Manucci, *Storio Do Mogor*, Vol 4, Tr. William Irvine, Calcutta, 1907, Rept. 1967, p. 148.
48 Op.cit. Alberuni, 2Vols, Vol1, p. 187.
49 Op.cit. D.P Chattopadhyaya, Vol3, Part 1, pp. 273,274.
50 Khwaja Shaikh Said Farmuli referred to as Khwajgi at different places and he was a relative of Mian Taha.
51 Shaikh Rizqullah Mushtaqi, *Waqiat-e-Mushtaqi*, eng. tr.Iqtidar Hussain Siddiqui, NewDelhi, 1993, p.198.

etc.[52]. As *rasavadins* used to have extensive knowledge of metals and minerals, they by their frequent experiments also prepared mineral medicines which were later in use along with Ayurvedic and Unani medicines[53].Alberuni writes that he could not learn from Hindus the methods and the elements (whether mineral, animal or a vegetable) used by them in this science. But he had heard Hindus speaking about some processes such as; sublimation, calcination, of analysis, waxing of talc etc. These processes are generally used in alchemy[54].

Famous works on Alchemy:

Medieval alchemists wrote a number of texts between 9th and 14th centuries and these texts provide a lot of information regarding alchemy and also metallurgy. Some of these works are wholly based on alchemy while in some texts alchemy is only a part[55]. Some of the famous works on alchemy during medieval period are given in the table below.

WORK	AUTHER
Rasendrasarasamgraha	Gopal Krishna
Rasendrachintamani	Ramchandra Guha
Rasahrdayatantra	Govinda Bhagwatpad
Rasaratnakara	Siddha Nityanatha
Rasarnava	Anonymous
Rasendracudamani	Somadeva
Rasaratnasamuccaya	Vagabhatta
Rasaprakasasudhakara	Yasodhara
Rasarajalaksmi	Ramesvara Bhatta
Rasasara	Govinda Acarya
Rasakaumudi	Sarvajnacandra
Rasabhesajakalpa	Suryapandita
Rasasamketakalika	Camunda
Lohapaddhati	Suresvara
Kankaligrantha	Nasirshah
Rasamuktavali	Devanatha

52 Op.cit.D.P Chattopadhyaya, Vol3, Part 1, pp. 274.
53 Ibid. 286.
54 Op.cit. Alberuni, 2Vols, Vol 1, p.
55 Op.cit. D.P Chattopadhyaya, Vol3, part1, p. 156.

Besides these few more works on preparation of medicine were *Hikmatul Baligha* written in 17th century by Mulla Mahamud Jaunpuri o which a commentary was written by Mir Yahya and he named it Ash Shamsu i bazighah- *majmu alus-sana*. It was an illustrated encyclopaedia describing a number of manufacturing processes like dissolving metals, polishing glass, colouring of different articles and the making of precious stones[56].

Thus it can be concluded that the concept of Rasayana or alchemy in India originated with the importance attached to a healthy body and desire for long life since ancient times. It originated in different countries independently but influencing each other's practices due to cultural exchange. In India it kept on developing in medieval times. Various alchemists came into prominence in medieval India. The ruling class was also interested in this art like Akbar who learnt it from a yogi. Some nobles like Mian Taha during Sikandar Lodhi's time and Amanat Khan during Aurangzeb's reign were well versed in it and were also actively engaged in doing alchemical experiments. The *rasavadins* were actively engaged in their laboratories doing experiments and were well versed with the nature and properties of various metals and plant essences and thus prepared different types of medicines in the form of *bhasmas* etc. which were used as medicines and these *bhasmas* are still used in Ayurvedic and Siddha systems of medicine. Along with medicine, Rasayana also gave rise to the science of metallurgy. Due to the frequent experiments performed by *rasavadins* on various metals, there was growth in the science of metallurgy also. Various alchemical treatises on Rasayana were also written in medieval period.

[56] Op.cit. K.P Bahadur, p. 345.

CHAPTER – 4

Chapter-4

Nature of diseases, their cure, and the sources of medicines

Since ancient times people were having knowledge of diseases and their cure. There was a kind of awareness of maintaining good health. For example; use of ceramic vessels during Harappan civilization indicates that they might have been aware of the advantages of cooking food in these vessels. The food in ceramic vessels can be cooked at sustained heat and in this manner are more palatable, and toxins in certain grains like wheat and barley can be reduced, thus improving digestibility[1]. Evidences of highly developed medical science are reinforced with the hygienic arrangements found in the ruins of Mohenjo-Daro, Harappa and Lothal but these are silent about the state-of-art of Indian medicine[2]. The development of Indian medicine is seen to be the contribution of Vedic Aryans; Rig-Veda is comprised of hymns and prayers addressed to different deities whose medical and surgical skills are also extolled. But Atharvaveda which was composed at a later date is replete with prayers, incantations, spells, and charms to protect people against all kinds of disease and natural disasters. It is to this Veda and to the practices provided by another later work of Atharvaveda, the Kaushika Sutra, that we are indebted for our knowledge of medicine during Vedic period[3].

R.C Jauhri quotes a tradition in medieval times, according to which, there were 18000 diseases in all. The ablest physicians didn't know about 6000 diseases. Another six thousand diseases were known to physicians but they didn't know how to cure them , thus it was only remaining 6000 diseases which could be correctly diagnosed by physicians and appropriate medicines could be prescribed for them[4] .

Besides physicians common masses were also involved in curing diseases, for example; Manucci in his account has mentioned about an Augustian friar who had swelling and pain in his testicles and was cured by an old women by applying some

1 Rita. P.Wright, *The ancient Indus: Urbanism, economy and society*, New Delhi, 2010, p. 60.
2 D.P Chattopadhyaya, *History of science, philosophy and culture in Indian civilization* vol. IV, Part 2, New Delhi, 2002, p.276.
3 N.H. Keswani, *The Science of medicine and physiological concepts in ancient and medieval India*, New Delhi, 1974, p. 6.
4 R.C Jauhri, *Firoz Tughluq (1351-1388 A.D)*, Jalandhar, 1990, p.129.

stewed leaves to the painful place and the friar was completely restored to good health but the old lady was imprisoned on the orders of chief physician. Also, he mentions about a Hindu practitioner who knew a perfect cure for scrofula. The chief physician wanted to learn his secret and he was sent to prison. The practitioner was informed that he would not be released until he teaches the physician the secret of curing that ailment. But the practitioner preferred to die than to reveal the secret[5]. Also, Tavernier writes that during Mughal period most of the physicians were in the service of kings and princes and in case of common people, they were having knowledge of certain herbs for curing some common diseases and the ladies of the families went out in the mornings from the towns and villages to collect those. He further writes that in the town there were generally one or two men who were having knowledge of medicine and used to seat themselves in the market place or at the corner of the street and administer remedies, either potions or plasters, to those who ask for them[6]. Royal ladies were also having knowledge of medicine; For example; One day when Akbar suffered from tooth ache, Haji Begum (maternal aunt of Humayun) rubbed some medicine on his teeth and his pain was soothed[7].Bernier writes that gout, stone, complaints in kidneys, catarrhs and quartanagues[8] were virtually unknown in India and the persons who came to India afflicted with any of these disorders shortly got complete cure. Even the venereal disease which was common in India was not that much virulent as in other parts of the world. Further Bernier says that nevertheless in India there was great enjoyment of health yet there was less vigour in the people as compared to the people living in colder climates due to excessive heat in India[9]. Bernier has also written that method of treatment in India differed from Europe and was based on certain principles such as; a patient with fever did not require much nourishment, meat broth was considered worst for a sick body especially for those having fever, fasting was considered the sole remedy for sickness, and blood-letting on certain extra-ordinary occasions such as; brain fever, inflammation

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5 Manucci, *Storio do Mogor*, Vol 3, Eng Tr. William Irvine, London, 1907, rept.1966, pp. 128,129.

6 Tavernier, *Travels in India*, Vol1, eng. tr. V Ball, ed. William Crooke, New Delhi, 1977, p. 240.

7 Abul Fazl, *Akbarnama* , Vol3, Eng tr. H. Beveridge, New Delhi, 1973, p.108.

8 A fever which reoccurred every fourth day.

9 Francois Bernier, *Travels in Mogal Empire (A.D 1656-1668),* Revised by Vincent A.Smith, New Delhi,1934, pp.253 & 254.

of chest, liver, and kidneys. There was lack of knowledge about human anatomy[10]. There were different sources of medicines such as; plants, animals, mineral etc. Some herbs were imported e.g. Mirza Haider Dughlat in his *Tarikh-i-Rashidi* writes that *Champa*[11] or nomads brought *zedoary* or *jadwar* to India which was an aromatic root used in medicine[12]. Some of the common diseases prevalent in medieval India can be described as under:-

Pestilence:

Pestilence kept on occurring from time to time. Sometimes the outbreak of pestilence put hindrance in the way of various expeditions, For example; During Babur's siege of Qandhar, pestilence broke out in Qandhar and spread to Babur's camp. Due to which Babur had to return to Kabul[13]. Pestilence was great cause of deaths in Hindustan. During Jahangir's reign in the 10th year of his accession, a great pestilence appeared in some places in Hindustan. It started from the parganahs of Punjab and from there spread to the city of Lahore. Many people died of it. After that it spread to Sirhind and Doab, until it reached Delhi and surrounding parganahs and villages. But according to the great men of the age and from the old histories it became known that this disease had never shown itself in Hindustan before. Physicians and learned were questioned about its cause. Some were of the opinion that it came because there had been drought for two years in succession and little rainfall; and others said it was on account of corruption of the air which occurred through the drought and scarcity[14]. If one person in a family was affected by plague, it was soon passed on to the whole family. Even it spread among the animals who feed on their dead bodies. There was so much fear of death that parents would hesitate to approach their children and vice-versa. About its symptoms Jahangir writes that on the first day there was head-ache, fever and excessive nose-bleeding and on the second day the person died[15]. When the disease was about to break out, a mouse would

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10 Ibid. pp.338 &339.

11 The inhabitants of Tibet were divided into two; Champa or 'dwellers of desert' and Yulpa or 'dwellers in villages'.

12 Mirza Haidar Dughlat, *Tarikh-i-Rashidi*, Tr.E. Denison Ross, ed. N. Elias, Delhi, 1986, p. 408.

13 Babur, *Baburnama*, eng.tr. A.S Beveridge, 2vols, New Delhi, 1922, Reprint 1970, p. 432.

14 Jahangir, *Tuzuk-i-Jahangiri*, 2Vols, Vol1, Eng. tr. Alexander Rogers. ed. H. Beveridge, Delhi, 1989, p. 330.

15 Ibid. pp.442.

rush out of its hole, as if mad, and striking itself against the door of the wall would expire. If immediately Thevenote and Careri have mentioned that pestilence became a cause of depopulation of cities in a few hours[16]. Banarsi Das has written that there was no cure for it and even doctors were dying like rats. It used to be so contagious that no one dared to touch anyone's food but after some time it disappeared on its own[17]. The disease of plague occurred frequently in medieval India and disappeared on its own after some time. In Shahjahan's reign we find that Shahjahan ascertained the efficacy of bezoar stone in treating pestilence. This shows that attempts were made to discover the treatment of those ailments whose cure was beyond hope[18].

Cholera: Cholera was a very common disease in medieval India. Manucci uses the term *mort-de-chien*[19] for it[20]. Diarrhoea is a common symptom of cholera and it became a cause of death several times. This shows that the proper treatment of diarrhoea was not yet developed. For example Mir Khalilullah who was a mansabdar during Jahangir's reign was attacked by bilious diarrhoea from eating too many mangoes and he died in 10 or 12 days.[21]According to Thevenote and Careri in Indian the common people used to take cooked rice with curd and no other food was used as long as it persisted. Same remedy was used for blood flux. Thevenot and Careri have mentioned a remedy for this disorder. It was to take two drachms[22] of roasted rhubarb[23] and a drachm of cumin-seed. These were powdered and taken either with lemon-water or rose-water[24]. Manucci has mentioned about the use of actual cautery for obstruction and cholera[25]. Also, he (Mannucci) writes that the best remedy to treat cholera was to burn the middle of the heel

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16 Thaevenot and Careri, *The Voyages in Seventeenth century*, Vol2, ed. J.P Guha,New Delhi,p.203.
17 Banarsi Das, *Ardhakathanak*, tr Mukund Lath and Ganesh Pyne, New Delhi, 2005, p. 117.
18 Inayat Khan, *Shahjahanama*, tr. A. Fuller, ed. W.EBegley and Z.A desai, New Delhi, 1990, p. 500.
19 Mort-de-chien is the French medical term for cholera.
20 Niccolao Manucci, *Storio do Mogur or Mughal India*, Vol 2, Eng. tr. William Irvine, London, 1907.pp.157.
21 Jahangir, Vol. 1, op. cit. p. 305.
22 1drachm=3.89gms.
23 Rhubarb or *Rheum rharbarbarum* is a plant having large leaves and long green or reddish leaf stalks that are edible; its roots are laxative and purgative.
24 Thaevenot and Careri, op. cit.p. 184.
25 Manucci, Vol 3,op.cit. p.117.

with a red hot iron until the heat was felt. By doing this the pain was relieved and the vomiting also stopped[26].

Cholic:

According to Thevenot and Careri Indians were affected with four types of cholic. The first was bare cholic that caused severe pains; the second besides pain caused diarrhea, the persons affected with third suffered from violent vomiting along with pain while in the fourth type produced all the symptoms the persons suffered from vomiting, looseness and extreme pain. It occurred because of indigestion. It became the cause of death many times. The remedy that was used against it was to heat a peg of iron till red hot, clap it to the sole of the patient's heel and to hold it there till the person was no longer able to endure it, so that iron left a mark behind it. The same was done to other heel with same red hot iron, and that remedy really worked and reduced pain. Bloodletting was also done. But if it was done before the operation it was harmful and could lead to death but bloodletting after two days of operation was not dangerous. Some people used ligatures for curing this ailment and bind patients head with a swathing band tightly. Same was done with his back, legs, and thighs[27]. In *Sirat-i-firozshahi* treatment of stomach disorders is given. For cleansing the stomach use of beet root and cinnamon is mentioned[28].

Disease of Pthisis:

Sultan Mohammed bin Tughlaq died due to the disease of Pthisis[29]. The fever arising out of the pthisical disease of lung was called "*Diqq*". There were different opinions about this fever. One of the opinions was that the fever seized upon the chief essential organs, especially the heart, and the moisture of the body disappeared. Another opinion was that it was an extraneous fever attacking the body by means of its generation internally. One more opinion was that it was either simple or putrid fever and usually

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26 Mannucci, Vol2, op.cit. p.157.
27 Thevenot and careri, op.cit. p.184.
28 *Sirat-i-Firozshahi*, digitized manuscript in Khuda Baksh Oriental Public Library, p. 239, kblibrary.bih.nic.in.
29 An atrophy of the body or part of the body, especially pulmonary tuberculosis.

very fatal with an exacerbation on the day of its outbreak. This also included shivering. Also when *Diqq* became complicated with one of the fevers, it required treatment by purges. In the first feel the surface of the body was not hot but after few moments it felt scorching and heat increases especially in the face and upper parts of the body. The patients ought to be given nourishing food but some unskillful physicians withheld food and killed the patient speedily. In *Muntakhabut-t-twarikh* there is no mention of any lung symptoms of Phisis, all that is described is continued fever of remittent type running a moderately long course, diarrohoea being a simultaneous symptom appearing late in the disease. This fever was probably very common in India. The putrid fever is compared to the "enteric fever" of modern science. The degrees of severity of fever are also mentioned. The first was called "Diqq", the second that was more severe was called "*Zabul*" and the most severe of all was called "*hashf*".[30]

Goitre:-

Goitre was also a disease which was very common in certain places. Jahangir writes, "There is a river in Rajour. Its water during rainy season gets poisoned. Many of the people get a swelling (*bughma*) under the throat, and are yellow and weak"[31]. Also Abul Fazl in his *Ain-i-Akbari* has written that at Hajipur people used to suffer from swelling in their throat which gradually increased to the size of a coco-nut, especially in young children[32]. The cause of goiter was not known. Goiter is common in hilly areas which occur due to deficiency of iodine. Iodine is usually leached away by erosion in soil in mountainous area. This leads to iodine deficiency. Also, the dietry habits of hilly people are also responsible for this to some extent. It is seen in hilly areas that consumption of naturally occurring goitrogens like soyabean, cassava, millets, sorghum, sweetpotato, broccoli, cabbage and cauliflower lead to thyroid disorders[33].

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30 Badauni, *Muntakhabu-t-Tawarikh*, Vol1, Eng. Tr. George S.A Ranking, Patna, 1973, p. 319.
31 Jahangir, Vol2, op.cit. p.18.
32 Abul Fazl, *Ain-i-Akbari*, Vol2, Eng. tr. Colonel H.S Jarret, Delhi, 1989, p. 163.
33 Dr Shenny Bhatia et al. , Thyroid swellings- A Common Problem in Hilly Areas, *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS),*13(5), Solan, 2014, pp. 88-90.

Small Pox:

There was no effective remedy for small pox either in Ayurveda or in Unani medical system. Perhaps Indian physician Muhammad Akbar Arzani (d 1722) deserves some credit as he attempted the relief of a patient who was his own son by pricking and draining out vesicles with the help of gold needles[34].Small pox occurred frequently in India[35]. It became a cause of high death rate. There were two types of viruses causing this disease, one of which was more lethal and was a cause of high mortality, the other was mild and it caused less deaths[36]. Alberuni writes that people could recognize from certain signs which of them was virulent. To treat the virulent small pox, they used to destroy one limb of the body but not killing it. They used cloves as medicine[37].

Dysentry:

Dysentry is mentioned as *Sangrahani* [38] in Indian medical texts. This disease like plague also disappeared on its own[39].

Children diseases:

One of the common diseases among children mentioned by Thevenote and Careri was *Akeron*, it might have been diphtheria. In this there was inflammation of tongue and mouth which further led to excessive heat. This disease could lead to death sometimes. The parents of the children used different herbs to cool down the heat. This shows there was general social awareness of curing certain diseases[40].

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34 Irfan Habib, *Inside and outside systems: Change and innovation in medical and surgical practice in India* in Deepak Kumar, *Disease and medicine in India*, Delhi, 2001, p. 75.

35 Thaevenot and Careri, *The Voyages in Seventeenth century*, Vol2, ed. J.P Guha,New Delhi,p. 180.

36 Ishrat Alam, *Small-pox and its treatment in pre-modern India* in Deepak Kumar, *Disease and medicine in India*, Delhi, 2001,p. 85

37 Abu- al-Rayḥ an Muḥ ammad (Alberuni), *Alberuni's India*, Eng.tr. Edward.C.Sachau, 2 Vols, Vol 1, New Delhi, 1964, p. 399.

38 *Sangrahani* according to Indian medical texts is caused by the malfunctioning of the *grahani*, a nadi, or artery containing vital energy, that is agni, or digestive fire. The agni is responsible not only for digestion of food but also its assimilation and elimination. It occurs when diseased agni causes the excretion of an unhealthy mucous substance called ama, instead of assimilating the vital juices.

39 Banarsi Das, op.cit. p.117.

40 Thavenot and Careri, op. cit .p.180.

Some methods of diagnosis of diseases:

Urine Examination:

One of the common methods of diagnosing disease in medieval India was through urine examination. The physicians had gained so much expertise in it that one day Sultan Nasir-ud-din Shah in order to test the knowledge of a physician sent three bottles each containing urine of a sick woman, a monkey and a buffalo to the physician. The physician smiled and said that one of the patients should be given medicine with warm water, the other was to be given boiled seeds of cotton mixed with few other things and the third was to be loosened and set free and then said all the three would get cured[41]. Badruddin Damishqi had a great expertise in urine examination[42].

PULSE:

Feeling the pulse was another method of diagnosing diseases. Some physicians like Maulana Badruddin Damishqi could judge the cause of disease just by feeling the pulse of the patient and also could tell whether it was curable[43].

Other health issues:

Sometimes stone disorder became a cause of death. For example Sultan Mehmood was affected with stone disorder and this became a cause of his death[44]. Beef was considered as a cause of various diseases. Akbar had prohibited the use of beef. Further the doctors confirmed him in his opinion that beef was very indigestible and could cause all sorts of diseases[45]. There was a consciousness of health issues that could arise due to marrying at early age. During Akbar’s reign boys and girls were not allowed to marry before the age of 16 and 14 respectively because it was considered that offspring

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41 Shaikh Rizqullah Mushtaqi, *Waqiat-e-Mushtaqi*, eng. tr.Iqtidar Hussain Siddiqui, NewDelhi, 1993, p.227.

42 Op. cit. D.P Chattopadhyaya vol. IV, Part 2, p.328.

43 Ibid. p.328.

44 Mahomed Qasim Ferishta, *History of the rise of Mahomedan power in India*, Vol1, Eng. tr. John Briggs, London, 1829, Reprint Calcutta, 1908, reprint , Calcutta, 1966, p. 51.

45 Abul Fazl, *Ain-i-Akbari*, Vol1, Eng. tr. H.Blochmann, Delhi, 1989, p.193.

of early marriages was not healthy[46]. Today modern medical science says a girl married at early age doesn't have a well-developed uterus and there are chances of miscarriage and there is a risk of life to mother too.

Cure of various ailments and injuries:

Bloodletting:

Blood-letting was a common practice for curing various ailments. Sometimes it was done for reducing fever. Babur in his *Baburnama* mentions the practice of blood-letting for reducing fever[47].In *Tuzuk-i-Jahangiri*, Jahangir writes about curing of eye ailment through blood-letting[48]. It was also done in case of congestion of blood or *Khun Para* e.g. Jahangir reportedly suffered from *Khun para* in 1612. He was bled on the advice of his eminent physician Muqarrab Khan. The persons specialized in curing wounds and bloodlettings were called *Jarrahs*. Muqarrab Khan was an eminent jarrah during Jahangir's reign who later on became the governor of Gujrat, Bihar and Agra[49]. Manucci mentions about members of ruling class who used to let their blood frequently and the procedure of blood- letting. He writes, "Ordinarily, the princes and princesses have themselves bled twice in the month of March, and interval between the two bleedings does not exceed twenty four hours. The operation is begun half an hour before the setting of the sun. Three days afterwards they take a purge, but if necessity demands a shorter interval, they do not wait three days, but they are governed by the requirements of the case. It is customary to keep ready for these occasions a set of silver scales and weights; the basin for receiving blood is also of silver. On the ground is spread a large sheet, in order not to dirty the carpets and floor cloths; over the body of the prince is caste another sheet, somewhat smaller. All the princes are present at the operation, as also the principal eunuch and some under-eunuch who act as attendants. It is the business of one of these to throw a little charcoal into a little bit of iron, some small coin, and a few grains of raisins for preservation of the blood. After all these ceremonies, they buried the

46 Ibid, p.204.
47 Babur, op.cit. pp. 246, &399.
48 Jahangir, Vol2, op.cit. pp. 77.
49 Irfan Habib, *Inside and outside systems: Change and innovation in medical and surgical practice in India* in Deepak Kumar, op. cit. pp. 79.

blood in the garden, also performing customary superstitious observances. When the incision is made all those who are present make profound bows, adding the words 'May blood-letting be to your benefit. The same ceremonial is followed in case of princess. As soon as the surgeon leaves the room alms are distributed[50]. Manucci also writes that he got fees of 400 rupees from the prince after the bloodletting was finished[51].

Surgery:

In surgery India had made marvellous progress since ancient times. Surgery (*salya tantrum*) was one of the eight divisions of Ayurveda[52]. In *Susruta samhita* different types of surgical operations and various instruments used and methods of surgery are discussed [53].Susruta is credited with performing world's first rhinoplasty, using anesthesia and plastic surgery. Many of the surgical instruments used by him are similar to the present day instruments[54].

The practice of Surgery was well developed in medieval India also. Organ mutilation like cutting of nose and ears as punishment was common in medieval India, and with it surgery also gained importance[55]. The cut parts could be sewn again For example; Kafur, one of the eunuchs during the reign of Alauddin Khilji was ordered to cut the end of Hussayn's ear as a punishment for his treachery; but eunuch mistaking the order cut the whole off the whole ear; on seeing this the King was very angry and a surgeon was called upon and he had the ear sewn again. Kafur assisted in the operation and apologized to the sufferor[56]. New surgical instruments were invented. For example; during the reign of Firoz Shah Tughlaq there was an instrument that could detect the position of child in the womb of the mother[57]. Cesarean birth was also successfully done which further shows advancement in the field of surgery. For example; when Bahlul

50 Niccalao Mannucci, *Storio do Mogur*, Vol 4, tr. William Irvine, Calcutta, 1907, Rept. 1967, pp. 211,212.
51 Ibid. 212.
52 Susruta, *Susruta Samhita*, Vol 1, Eng. tr. Kaviraj Kunja Lal Bhishagratna, Calcutta, 1907, p. 3.
53 Ibid. pp. 36-70.
54 ManoharBharadwaj, *History of science and technology in ancient India*, Delhi, 2010, p.61-62.
55 Jahangir issued twelve ordinances and one of those was the ban on cutting of the nose and ears of any person. He himself took a vow that he would not blemish any person with such punishment.
56 Jouhar Aftabchy, *Tezkereh al vakiat or Private memoirs of the Moghul Emperor Humayun*, Tr. Major Charles Stewart, London, n.d. p. 44.
57 Khaliq Ahmad Nizami, *Royality in Medieval India*,New Delhi, 1977, p.103.

lodhi was still in her mother's womb, her mother died because of the collapse of roof of the house she was living in and since by that time she had reached an advanced state of pregnancy, her womb was cut open and the child was found miraculously alive[58].

A surgeon was called *Bakhshi* by Mughals. The profession of surgeon was well established and occupied an important place in society. In Baburnama a skillful surgeon Ataka Bakshi is mentioned. About whom Babur writes, "He was skillful surgeon; if a man's brains had come out, he would cure it; and any sort of wound in any artery he easily healed. For some wounds his remedy was in the form of a plaister, for some medicines had to be taken". Once Babur had wound in his leg due to which he had difficulty in walking. The Mughal surgeon Ataka Bakshi was called upon and he tied a bandage in his leg and made him eat some fibrous root (*yildiz*) and thus cured him. He was so skillful that once a man had his leg broken in the slender part and bone was shattered for breadth of the hand. He cut the flesh open and took the bits of bone out where they had been and put some remedy in powder form and that remedy became bone in the region from where the bone was removed[59].

Manucci has given account of surgery done by the Mughal surgeons. He writes that during Bijapur campaigns, when the people belonging to Mughals were caught, instead of killing them they cut their noses and when they come back to Mughal camp with their bleeding noses. The surgeons used to cut the skin of their eye brows and put it over the wounds on the nose. Then they gave it a twist so that the live flesh of both surfaces meets. In course of time the wounds heal up. A mark of incision was left between the eye brows. This technique is called grafting in terms of modern medical science[60]. Opium, bhang or wine was used for making patient senseless; blue vitriol was used as ointment on the wound where skin was cut[61]. Thus different forms of surgery were practiced like osteopathology, grafting, obstetric surgery etc. With these surgical procedures different anesthetic techniques were also evolved.

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58 Abdul Halim, *History of the Lodhi Sultans of Delhi and Agra*, Delhi, 1974, p. 4.
59 Babur,op. cit. p.169.
60 Niccolao Mannuci, Vol 2, op.cit p.282.
61 Irfan Habib, *Inside and outside systems: Change and innovation in medical and surgical practice in India* in Deepak Kumar,p.81.

Besides professional surgeons some common people were also having expertise in setting bones e.g. When in 1528 young Mughal Princess Gulbadan's arm was accidently dislocated due to pulling hard by her step-mother, it was bound and set by a bow-maker (*kamangar*)[62]. Bernier and Tavernier both are of the view that Indians knew nothing of surgery[63]. But as per the above examples their views are not acceptable.

Inoculation or variolation:

In Mughal times inoculation or variolation became an important practice. This practice was first reported from Bengal in 1731, but the local tradition there dated it back to 150 years. This practice involved the introduction of matter taken from the pus of small-pox pustules into the blood stream by a thick needle[64]. This was actually the precursor of modern day immunization technique.

Rumi remedy for boils:

For boils Rumi method of treatment was quite effective. In Baburama the Rumi remedy for curing boils is mentioned. This remedy was recently discovered in Rum at that time. In this, pepper was boiled in a pipkin and the steam was passed over the sores and after the steam ceased the sores were laved with hot water. For example; during a march, Babur had painful boils over his body and he was cured by an Ottoman Turk who used this remedy[65].

Cure for body heat:

For this physicians recommended taking crushed hailstones in which some medicines were mixed. For example; one day when Sultan Nasiruddin had taken some quicksilver which created excessive heat in his body. The *Malik-ul-hukama* (chief physician) told him that when hail stone rains, he should take it as much as he could. When the hail stone fall, the *Malik-ul-hukama* crushed them and thus collected thirty

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62 Ibid. p.79.
63 Op.cit . Bernier, p.339, & Op.cit. Tavernier, Vol 1, p. 241
64 Irfan Habib, *Technology in Medieval India (650-1750)*, Delhi, 2008, pp.74-75.
65 Babur, op.cit. p. 657

seers of water, and then dissolved some medicines in it and presented it to Sultan. Since the time he began taking that medicine, his heat was greatly reduced[66].

Remedy for Scorpion sting:

In India venomous scorpions were common and there were several remedies for curing the sting. One of the best remedies was use of fire. Burning coal was put near the wound, the poison came out of the wound slowly and after some time, it got perfectly cured[67].

Curing the bite of mad dog:

Manucci writes that in India actual cautery was applied to the bite of a mad dog and without any other treatment the person recovered[68].

Cure against different forms of poisons:

Mannucci has written about a remedy against certain poisons. He writes about bone of an animal which was an effective medicament for every kind of poison. He has written that if a person was bitten by any poisonous snake, and dog, a scorpion, a tarantula, or other venomous animal, a small cut was made at the site of the wound, if it was not open enough. Over that was tied the liver of a cock. Then the patient was given one or two grains of powdered mixed with water. . He writes then that bone is applied at the place where the poison had rose causing the poison to flow back to the bile. By doing this patient was recovered completely. But those who had drunk the poison, for them half the quantity of the above mentioned potion was given[69].

Treating wound:

In *Waqiat -e -Mushtaqi* treatment of a wound by Mian Taha, a famous physician of Sikandar Lodhi's period is mentioned. For curing the wound bark of *Kanar*

66 Shaikh Rizqullah Mushtaqi, op.cit. pp226.
67 Thaevenot and Careri, op.cit. pp.88.
68 Manucci, Vol 3,op. cit., pp. 117.
69 Storio do Mogor, Vol 3, op.cit. p. 185.

(lote)[70] and Neem Tree was boiled and the wound was washed with this water and then the pulverized cauliflower was smeared upon it[71].

Fasting:

Several disesases were cured by fasting[72] . Bernier has written that in India "the sovereign remedy for sickness is abstinence"[73].

Sources of medicines:

Animals, plants and and even chemical substances were important sources of medicine. For the manufacture of medicines, there was no problem of raw-material and preparing of these medicines led to economic development in terms of crop-production.

Taxes were imposed on certain articles like cloth, skin, oil, grains, horses and camels and collected in market place. These taxes were known as *sair-i-jihat*. Among these articles medicines were also included[74].

Plant sources:

P.N Chopra writes that in ancient India physicians and surgeons (known as *bhisaks* or *vaids*) usually used herbal medicines which they prepared themselves or under their supervision if prepared by someone else. When a *vaid* treated a rich patient a portion of the medicine prepared from him was set aside by the *vaid* and gave it to the poorer patients free of cost[75].

Some of the plants as sources of medicines used in medieval India are:

Rose water (*Jul-ab*):

Rose water was distilled almost every house. It was distilled because of its medicinal value. It was administered in all cases of indigestion and stomach pain or

70 A large tree(*Celtus Australis*).
71 Shaikh Rizqullah Mushtaqi, op.cit. p. 193.
72 Thevenot and Careri, op.cit. p.298.
73 Bernier, op.cit.p.338.
74 Satish Chandra, Essays in medieval Indian economic history, Satish Chandra, New Delhi, 2014, p.36.
75 P.N Chopra , India-An encyclopaedic survey, New Delhi, 1984, p. 206-207.

bowels. It was considered that the older the rose water, the more effective it would be in treatment. It was given to the patients suffering from cholera and generally it was having a good effect[76]. Babur in his *Baburnama* mentions the use of Rose water as sherbet which acted as a purgative[77].In hot weather people applied a mixture of rose water, sandal wood and many scented and cooling oils to keep them cool[78]. Rose water was also used for making perfume (*itr*) which was attributed to Nur Jahan's mother. The *itr* was named by Salima Sultan Begum as *Itr-i-Jahangiri*[79].

Adhota Vasica:

The *Adhota, arusa, rus, bakas* was used as insecteside. People used to rub their bodies with this plant to keep them protected from leeches. The leeches could not bear the odour of this plant[80].

The leaves and the root of this plant are considered a very effective remedy for all sorts of coughs being administered along with ginger. In case of Pthisis the medicine was considered quite effective. It was said that no man suffering from this disease need to worry as long as this plant exists. The flowers and fruits are bitter, aromatic and anti-spasmodic. The fresh flowers are bound over the eyes in case of opthalmia. The leaves are also used as cattle medicine[81].

Pine-apple (*Ananas*)**:**

Pine-apple was called *Kathal-i-safari* or travelling Jack fruits; because young plants put in vessels could be taken during journeys and would yield fruits[82].The distilled juice of the fruit was used for dissolving stones in bladder[83].

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76 Mrs. Meer Hasan Ali, Observations on the Mussulmauns of India, New Delhi, 1917, Reprint 1975, p. 305.
77 Babur, op.cit. p. 400.
78 Varsha Gupta, Horticulture in Mughal India (1526-1750), Delhi, 2011, p.122.
79 Op.cit. Jahangir, Vol 1, pp. 270,271.
80 Travernier, *Travels in India*, Vol 1, New Delhi, 1977. Pp. 199.
81 George Watt, A dictionary of the economic products of India, Vol 1, Calcutta, 1889, pp. 108 & 109.
82 Abul Fazl, Vol1, op.cit. p.73.
83 Manucci, Vol3, op.cit. p. 173.

Chebulic myrobalan (*Myrobalanos quebulos)***:**

It was a wild fruit that grew in Gujarat and the hills of Srinagar. It was also exported from India to Europe. Due to its purgative properties it was used in medicine[84].

Balasamodendron mukul:

It was found in Cambay (Gujarat) and from it was produced Indian Bdellium. It was used as incense and in medicine also[85].

Bdellium is used in Indian medicine as demulcent, aperient, carminative. It is especially useful in leprosy, rheumatism and syphilitic disorders. It is also prescribed in nervous diseases and is employed in the preparation of ointment used for ulcers[86].

Water-Melon:

Water-Melon was given to the patient for reducing fever. This was a *Khurasani* practice.[87]

Lemon (*citrus acida*)**:**

Its juice was used as an antidote. Babur writes, "The lime is very plentiful about the size of hen's egg, and of same shape. If a person poisoned drink the water in which its fibres have been boiled, danger is averted"[88].

Sangtara (*citrus aurantium*)**:**

Babur writes, "The *Sangtara* is a fruit resembling orange (*naranj*). It is like citron in colour and form. It is deliciously acid fruit. Like lime it is a powerful stomachic"[89]. The fruit juice is considered good against bilious infection. Orange peel is useful against vomiting and intestinal worms[90].

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84 Ibid. p. 173.
85 Henry Yule, *Book of Ser of Marco Polo*, Eng.tr. Amy Frances Yule, Vol2, New Delhi, 1933. P. 397.
86 George Watt, *A dictionary of the Economic products of India*, Vol 1, Calcutta, 1889, p. 366.
87 Babur, op.cit. p. 246.
88 Ibid. p.511.
89 Ibid. p.511.
90 George Watt, Vol1, op. cit. pp. 259.

China root (*Chob-i-chini*, "Smilex China"): It was for the first time reported to have been used in China. The drug was derived from the tuberous root of the plant. It was used as powder or decoction. There are reports that up to 1893 it was recommended by physicians as good cure for syphilis, rheumatism and scrofula. It was also considered as a good tonic[91]. It was recommended by physicians for pain in limbs. For example; Once Aurangzeb was seized with illness and had acute pain in his limbs, which caused grave apprehension. He took china-root under the advice of his physician. After his recovery he richly rewarded his physician[92].There was a new discovery of treating Syphilis by the application of China root, during the first half of sixteenth century. It was considered a landmark discovery in both Europe and India[93]. It was only in nineteenth century that its used was given up in western medicine in favour of treatments with arsenic, mercury and bismuth which were further replaced with the discovery of Penicillin[94]. China root was found abundantly in the mountain ranges of Sylhet[95].

Mango: Persian term for mango was *Naghzak*. Abul Fazl has praised mango and says that no fruit can be compared with the colour, smell and the taste of this fruit. Kernels of mango stones taken with milk were used to aid in digestion. Abul Fazl in Ain-i-Akbari says, "The kernels of old stones are sub-acid, and taste well; when two or three years old they are used as medicine"[96]. Bernier has praised the mangoes of Bengal, Golconda and Goa. He writes "I donot know any sweetmeat more agreeable[97]." Manucci also mentions that mango stones were used to prepare medicines[98]. About mango trees of Bengal Abul Fazl writes "they grow to a height of a man and are not so high but produce abundant

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91 Irfan Habib, *Inside and outside systems: Change and innovation in medical and surgical practice in India* in Deepak Kumar, op. cit. p. 73.

92 Khafi Khan, *Muntakhabul lubab* in Elliot and Dowson, History of India as told by its own historians, Vol 3, Delhi, 1964, p. 382&383.

93 Irfan Habib, *Medieval India: The study of civilization*, New Delhi, 2008, Reprint 2009,2011, p. 200.

94 Irfan Habib, *Inside and outside systems: Change and innovation in medical and surgical practice in India* in Deepak Kumar, op.cit. p. 73.

95 Abul Fazl, Vol 2, op.cit. p. 137.

96 Abul Fazl, *Ain-i-Akbari*, Vol1, op.cit. p.72.

97 Francois Bernier, op.cit. p.249.

98 Manucci, Vol3, op.cit. p.171.

fruit”. The mangoes of Agra were also considered good[99]. Modern medical science shows that mango is rich in Vitamin A, C and D[100].

Coconut (*Cocos nucifera*)[101]:

Coconut was used for preparation of antidote against poison[102]. Manucci has written about *coquinhos* (little coconuts). These were used as a remedy for different infantile health problems such as diarrhoea and mouth-sores. Coconut water was used as a refresher and also used against inflammation of liver, kidneys and bladder; also for increasing urination. It was considered good for excessive heat of the liver, pain in bowels, or discharges of mucous or blood. When coconut became ripe, and he water changed into pulp, it was used for preparing different dishes. The coconut oil was applied on hair by women. The oil was also used for medicinal purposes such as; an ointment made from it was used for curing burns and ulcers. It also acted as a purgative and also for used for reducing weight[103].There was another class of palm tree called *palmeira brava*. In each fruit, there were three lumps of soft pulp which were very refreshing and these were also helpful to those who had difficulty in seeing at night[104].It was also used as an aphrodisiac[105]. The drink of unripe fruit is recommended in case of fever and urinary disorder[106].

Betel (*Piper betel*)**:**

Ibn Batuta writes, “Betel trees are found only in India and the town of Dhafari (at the extremity of Yemen). Betel trees were grown like wines on the cane trellises or else trained up coco palms. They have no fruit and are grown only for their leaves. The Indians have a high opinion of betel, and if a man visits a friend and latter gives him five leaves of it, you would think he had given him the world, especially if he is prince or notable. A gift of betel is far greater honour than a gift of gold and silver. It is used in this

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[99] Abul Fazl, Vol2, op. cit, p. 130 &192.
[100] *Britannica Encyclopedia* of India, Vol 3, New Delhi, 2008, p. 347.
[101] *Jauzi* in Hindi and *Narjil* in Arabic.
[102] Abul Fazl, Vol 1, op.cit. p.76.
[103] Manucci, Vol 3, op.cit. p. 175,176.
[104] Ibid. 177.
[105] Ibn Batuta, *Rehla*, Eng. tr. H.A.R Gibb, London, 1959, p. 387.
[106] George Watt, *The Commercial products of India*, Faridabad, 1966, p. 360.

way. First one takes areca nuts, which are like nutmegs, crushes them into small bits and chews them. Then the betel leaves are taken, a little chalk is put on them, they are chewed with areca nuts". Betel leaves were used as mouth freshener. They help in digestion and were used to prevent the disagreeable effects of drinking water on empty stomach[107]. Mannucci has also give description of betel or *pan* in his account[108]. Abul Fazl writes "Betel strengthens gums and makes hungry satisfied, and the satisfied hungry"[109]. Betel nuts yield alkaloid that vetenarians use as anti-worming agent[110]. Irfan Habib has given the list of crops for which crop-rates (rai's) were prepared. But for certain crops (like indigo, poppy, turmeric, hemp etc.) no rai's were prepared and revenue rates were formulated directly in terms of cash. Among these crops was betel-leaf (*pan*) also[111]. Thus, betel leaf production became a source of revenue which has a direct impact in growth of economy.

Betel acts as a stimulant and exhilarant. Ancient Indian writers recommend that betel should be taken early in the morning, after meals, and at bed-time. According to Susruta, it is aromatic, carminative, stimulant and astringent. It sweetens the breath, improves the voice, and removes all foulness of mouth. It also acts as an aphrosisiac[112].

Chiraunji (*Buchanania latifolia*) **:**

This tree grew in hilly areas and was also cultivated in gardens. It was used by people in custards and sweetmeats[113]. A gum extracted from stem was useful against diarrhoea . Its oil was used in preparing medicines and in confectionary; also used in glandular swelling of neck[114].

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107 Ibn Batuta, Rehla, Eng. tr. H.A.R Gibb, New Delhi, 1929, p. 114.
108 Mannucci, *Storio Do Mogur or Mughal India (1653-1707*), Vol1, Eng. tr. William Irvine, Calcutta,1965, pp.61.
109 Abul Fazl, Vol1, op.cit. p.77.
110 *Encyclopaedia Britannica*, Vol 1, New Delhi, 2005, p.267.
111 Irfan Habib, *Agrarian System of Mughal India*, New Delhi, 1999, p. 248.
112 George Watt, *A dictionary of the Economic products of India*, Vol 6, Part 1, Calcutta, 1892, p.254.
113 Babur, Vol 2 op. cit. p. 508.
114 George Watt, *A dictionary of Economic products of India*, Vol 1, New Delhi, 1972, p. 544.

Baidi- Mushk:

It is a tree with flowers having sweet fragrance. Juice was extracted from it which was taken as medicine. A kind of liquor was also made from it which was mixed with water and then taken. It was drunk as it was very useful and gave warmth to the body. It was very much in use in Kashmir. In Shahjahanabad it was grown in some gardens. The common people kept its leaves infront of them as they believed that it was helpful in warding off the influence of incantations and charms[115].

Spikenard:

It grew wild in mountains and was not sown. The plants grew a hand breadth high, and were closely intertwined. It was used for preparation of medicinal oils[116]. Palsaert writes, "…they are called *Koilte kie*" Spikenard was considered to be a valuable medicine or drug, particularly for stiffened limbs. It produced warmth and expelled cold. Best Spikenard was sold in Agra at the rate of 6 to 7 rupees per maund. According to Pelsaert it was not valued much in India but was exported to other places like; Thatta, Multan, Persia, the Deccan etc[117].

Cashew-nuts:

These were considered good for all obstructions in the breast. The fruit was cut into pieces and soaked in cold water, the cool juice that came out while chewing was useful for healing breast obstructions.[118]

Cassia fistula (*amaltas)***:**

It yielded a powerful laxative called cassia. Tavernier knew about its importance as a laxative for he had seen its effect on his servant who ate it[119]. Its bark was used in tanning material and a drug. The pulp of fruit was regarded safe and useful purgative, and is a

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115 Tasneem ahmad, *Miratul-istilah*, Delhi, 1993, p. 49.
116 K.N Chitnis, *Socio-Economic History of Medieval India*, Delhi, 2002, p. 286.
117 Francisco Pelsaert, *Jahangir's India*, Eng. tr. Moreland and P.Gayl, New Delhi,1972, p. 44.
118 Thevenot and Careri, op.cit. p.242.
119 Tavernier,Vol 1, op. cit.. P. 141.

common domestic medicine in India[120]. Canna Fistula which is a variety of Cassia Fistula was also used to cure constipation. Manucci prepared an enema to cure a person with irregular bowls. He collected some herbs with Black sugar, Olive oil, Canna Fistula for bowl movements and succeeded in his operation[121].

Rose:

Rose was also used as medicine. The properties of rose are said to be laxative, expectorant, and an aphrodisiac[122]. *Gulqand* is a confection of rose petals and honey. It is said to be a powerful cardiac stimulant and tonic. Its use for cardiac problem was known to the physicians, For example; During the reign of Humayun , when Muhammad Zaman Mirza[123] was seized with a pain of heart, the physicians recommended *Gulqand*. He accordingly asked Sultan Bahadur for the same and was thus provided by him[124].

Honey:

Honey was also used for curing various ailments due to its medicinal value. It was held in high esteem as a drug among ancient physicians. It relieves dimness of vision, is stomachic tonic, and also acts as laxative and expectorant. Honey acts as an aphrodisiac when heated with pulp of roses and cures bites of snakes and of dogs. According to *Muntakhabu-T-Twarikh* honey was considered beneficial to old men but injurious to youth and people of hot temperament. It may also have been used as a treatment of tremors. Good for old man might refer to senile tremors[125].

In *Muntakhabut-T-Twarikh* the poisonous qualities of honey is also mentioned. Poisonous quality of honey was known. Honey bees dwelling on poisonous flowers use to produce poisonous honey and this fact was well known. For example; Referring to *Makhzanu-l-Adwiya*, in *Mutakhabut-t-twarikh* ,it is writen that honey shed by bees which have collected nectar from herb *Absantin (Absinthium*) and the like acquires bitter taste and causes diseases of stomach and liver, while another kind of honey causes fainting and

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[120] George Watt, *The commercial products of India*, Faridabad, 1966, p-286.
[121] Op.cit. Niccolao Manucci, Vol 2, p-165
[122] Badauni,op.cit. p.148.
[123] He took refuge with Sultan Bahadur of Gujrat when he rebelled.
[124] Al-Badauni, op. cit. p. 452.
[125] Ibid. p.148

cold sweats and loss of consciousness. Some other symptoms of honey poisoning mentioned are vomiting, purging, acute gastric and abdominal pain and cramps[126].

Saffron:

It was considered by Greek physicians that saffron causes smiling when taken internally. Its medicinal value was also known. The medicinal value of saffron is given in *Muntakhabut-t-twarikh* as; saffron is exhilarating and tonic to senses, excitant, and digestive, laxative and corrective of impure humors of the phlegm, and preserving them from alteration. It is diuretic and alleviates constipation, produces mirth and laughter, purifies kidneys bladder and skin. It carries virtues of medicines to the heart and to all viscera. It removes obstructions of brain, liver and spleen. It prevents the flow of moist humors to the eye when used either as an ointment or a *collyrium*. It is hot in third degree, dry in first degree, laxative, digestive, improving complexion, and very intoxicating with wine causing heaviness, headache and drowsiness, clears the sight and facilitates parturition, and respiration, is a cardiac tonic and is diuretic and controls the animal passions and cures internal diseases and uterine complaints; it is a sexual tonic and cures diseases of spleen[127]. In Gujarat, people applied mixture of white sandal wood paste mixed with saffron and other scents to keep their bodies cool[128]. Saffron was grown in Pampore in Kashmir and Jahangir writes "I don't know if there is so much saffron in any other place in the world"[129]. Saffron was also produced in Kishtwar and its quality was finer than Kashmir[130]. The *collyrium* of saffron (*kohl-i-zafran*) was used to cure eye diseases[131]. According to *Encyclopaedia Britannica* saffron is one of the world's most expensive spice. The colour and flavour are essential ingredients for certain Mediterranean and Asian dishes as well as for special English, Scandinavian and Balkan baked goods. During ancient times Greek and Romans scattered saffron as perfume in halls, courts, theatres and bathrooms[132].

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126 Ibid. p. 585.
127 Ibid. pp. 41&42.
128 Varsha Gupta, op.cit. p.122.
129 Jahangir, Vol1, op.cit. p. 92.
130 Jahangir, Vol2, op.cit, p. 138.
131 *Sirat-i-Firozshahi*, p. 235.
132 *Encyclopaedia Britannica*, Vol 8, New Delhi, 2005, p. 217.

Tamarind:

The ripe fruit of tamarind soaked in salt and water was strained and the water acted as a good laxative. As it also had blood purifying properties, it was used by people in curries[133]. Tamarind mixed with water was also used in case of fever[134]. The flat seeds of tamarind are used in oriental foods, beverages and medicines[135].

Alcohol:

The bad effects of drinking alcohol were well known but it was also known that a limited quantity acts as a medicine and it was recommended by physicians in certain cases as a medicine. In *Tuzuk-i-Jahangiri* , Jahangir himself advices Shahjahan to take wine in limited quantity as excess of it was harmful for health as recommended by the eminent physicians. Jahangir writes, "Bu Ali (Avicenna), who is one of the most learned hakims and physicians, has written this quatrain.

> "*Wine is raging enemy, a prudent friend;*
> *A little is an antidote, but much as a snake's poison*
> *In much there is no little injury,*
> *In a little there is much profit"*

Jahangir writes that he had not drunk wine till the age of 15 years except two or three times during infancy when his mother and wet nurse gave it as an infantile remedy. His father was asked for a little sprit and he gave it to him to the extent of a *tola* mixed with water and rose water as a remedy for cough, designating it as a medicine[136].

Aloe-wood:-

There were various kinds of aloe-wood but best was called *mandali* and the one next to it in quality was called *jabali* or *hindi*. Aloe-wood is exhilarating. The root of Aloe wood called *Agar* was often used in perfumes. It was generally used in incense in

133 Mrs Meer Hasan Ali, *Observations on the Mussulmauns of India*, Delhi, 1975, p. 312.
134 O.P Jaggi, *Medicine in Medieval India*, Delhi, 1977, p. 110.
135 *Encyclopaedia Britannica*, p. 202, Vol. 9, p. 202.
136 Jahangir Vol1 op.cit, p. 306.

powdered form and was used by rubbing on skin and clothes[137]. Its root due to its strong odour was also used against lice. It was also mixed in compound medicines[138].

Opium (*Papaver somniferum*)**:**

It was highly prized as having medicinal value and was also exported to Europe as it was considered a valuable medicine there. Malwa and Banares were important centres of poppy cultivation. Later on it was cultivated in Bihar and Bengal also[139]. In Malwa , according to Abul Fazl people gave opium to small children to keep them quiet. Abul Fazl in *Ain-i-Akbari* writes "High and low give opium to their children up to the age of 3 years[140]." Opium also acts as slow poison. Bernier writes that the heads of poppy crushed and soaked overnight was given to prisoners as slow poison.[141] During Jahangir's time there were reports of women taking their own lives with an over dose of opium .For example, Jahangir writes that Prince Khusrau's mother, in grief at his ways and behavior and the misconduct of her brother Madho Singh killed herself by swallowing opium.[142] Also when Lal Kalawant[143] died one of his concubines killed her by taking excess amount of opium[144]. Opium was also used as aphrodisiac. The herbo-mineral preparation of opium was also used in case of chronic diarrhoea. According to *Encylopaedia Britannica* opium has medical uses. Habitual use of opium produces physical and mental deterioration and shortens life. Overdose can cause death by respiratory depression[145].

Hemp (*Bhang*, *cannabis sativa*)**:**

It was used against diarrhoea and also used as an aphrodisiac[146]. Hemp is a source of *Marijuana*. In most countries it is primarily grown for fibre[147].

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137 Abul Fazl, Vol1, op.cit. pp. 85 &86.
138 Tasneem ahmad, op.cit. p.316.
139 Dr. Pant, *Economic History of Mughals*, Delhi, 1990, pp.98, 197.
140 Abul Fazl, Vol1, op.cit. p. 207.
141 Bernier, op.cit. p.106 &107.
142 Jahangir, Vol1, op.cit. p. 55.
143 Lal Kalawant was in service of Akbar since the childhood of Jahangir.
144 Jahangir, Vol1, op.cit, p. 92.
145 *Encyclopaedia Britannica*, Vol 5, New Delhi, 2005, p. 167.
146 G.N Chaturvedi, S.k Tiwari and N.P Rai, Medicinal use of opium and Cannabis in Medieval India, *Indian Journal of science* , Vol 16(1), Varanasi,1981, pp. 31-35.
147 *Encyclopaedia Britannica*, Vol 5, New Delhi, 2005, p. 13.

Pumple nose (C*itrous decumanus*)**:**

Its sherbet was a very good drink for sick[148].

Noona fruit (A*nnona reticulate,* custard apple):

Its bark was a considered powerful astringent or tonic and was of great use in preparing medicines[149].

Jamrool fruit (*Eugenia alla or aquea*)**:**

It was regarded as a cooling medicine during the hot months of the year. Its bark was used as a very good remedy against aphthae in childeren[150]. Jamun is used to prepare vinegar throughout India[151].

Egyptian Willow (*bedmus, bed-i-Mushq*)**:**

It was effective against all kinds of fevers caused by heat[152].

Plantain (*Musa Sapientum*)**:**

The plantains were used by physicians in India as dressings for blisters or as a covering for the shaven head in cases of brain fever[153].

The unripe fruit is considered cooling and astringent. It is of much use in case of diabetes. Young plantain leaves are used as a cool dressing for blisters and burns and to retain the moisture of water dressings. The root and stem are considered tonic, antiscorbutic, and useful in blood disorders. The sap forms valuable drink and mouthwash to allay thirst in cholera[154].

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148 Varsha Gupta, op.cit. p.132
149 Ibid. 132.
150 Ibid. 132.
151 George Watt, *The Commercial products of India*, Vol1, Faridabad, 1966, p.526.
152 Ibid. 132.
153 Ibid. p. 132.
154 George Watt, *The Economic products of India*, Vol. 5, Calcutta, 1891, p. 298.

Bair tree (*zizyphus jujube*)**:**

Zizyphus Jujuba, a tree bearing an oval baccate fruit of reddish colour called Hindustani *ber*. Both leaves and fruits of this tree were used by Arab physicians. Taking reference from *Bahr-l-Jawahir*, it is written in the English translation of *Muntakhabut-tawarikh* that the fruit is useful to purify the blood from evil humours, and is also useful in case of dry coughs and the roughness of the chest and lungs and is also effective against pain in kidneys and bladder [155].Its bark was used in the preparation of medicine against the disease of tapeworm[156].

According to ancient Indian literature there are three kinds of *ber*. One kind of *ber* acts as coolant, aperient, astringent, aphrodisiac and nourishing and to be administered in case of bilious diseases, fever, and hemorrhages. The second kind is sweet yet slightly acrid and is recommended for flatulence, bilious diseases and constipation. The third is inferior to second. Old or preserved *ber* fruit is described as capable of removing dryness or weariness and acts as a stimulant and aids in digestion. The kernel is said to be anti-bilious and useful in cases of nausea and thirst form of fever. In Northern India, the fruit is believed to purify the blood, and to assist in digestion, the bark is remedy for diarrhoea and the root is used as decoction in fever and delirium also when powdered acts as dressing to ulcers and old wounds. Leaves are made into plaster which is applied in strangury and other diseases. The seeds are employed as astringent in diarrhoea[157].

Guava tree:

Its leaves were used for the preparation of certain medicines[158]

Sandal wood:

Three kinds of sandal wood mentioned in *Ain-i-Akbari* are white, yellow and red. Red was considered by some to be more refreshing than white; some preferred white because white is more cooling than red. Abul Fazl writes that the best was that which was

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155 Op.cit. Badaoni, Vol 1, p. 117.
156 Op.cit. Varsha Gupta, p. 132.
157 George Watt, *The Economic products of India*, Vol 6, Part 4, Calcutta, 1893, p.369.
158 ibid. p.132.

yellow and oily. It was called *Masqari*. Sandal wood was pounded and rubbed over skin but it was also used in other ways[159]. People of Orissa used to anoint their bodies with sandal oil[160]. The wood was ground into powder and mixed with water and the paste was applied to fore-head in case of head-ache. It was used on large scale in India[161].

Henna (*Lawsonia inermis*) :

Henna had demand among the chemists because it had medicinal value. It was also used in dying industry. Henna was produced in Oudh, Agra, Ajmer, Delhi, Malwa and Multan[162].

Braechagua or Miralexy:

Barbosa has mentioned about this plant in Delhi. The poisonous root and fruit of this plant was used as antidote against the poison of the same plant. Barbosa writes that *jogis* used to carry this with them[163].

Sugar:

It was also used in medicinal purposes[164].

Animal sources:

Milk:-

Milk was used in treating a person bitten by snake or who had taken poison[165].

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159 Abul Fazl, Vol 1, op. cit. pp. 85&86.
160 Abul Fazl, Vol2, op. cit. p. 139.
161 Op. cit. Badaoni, p. 452.uy
162 Hamida Khatun Naqvi, *Urbanization and urban centres under the great Mughals (1556-1707*) , Vol1, 1972, Lucknow, pp.20, 45, 140.
163 Duarete Barbosa, *The book of Duarte Barbosa* Vol1, ed. Mansel Longworth Dames, New Delhi, 1989, p. 234.
164 Hameeda Khatun Naqvi, *Urben centres and industries in Upper India*, Bombay, 1968, p. 222.
165 Tasneem ahmad, op.cit. p.41.

Milk of antelope and Tigress:

Milk of antelope and tiger were used as medicine. Milk of antelope was considered to be of great importance in curing asthma. The milk of Tigeress was very effective for brightening eyes[166].

Musk as medicine:

We get the reference of Musk[167] in *Muntakhabut-T-Twarikh*. It is written that *Mishk* is said to be the congealed blood of the navel of the stag of Khita[168]. The blood was taken by cutting the bladder and the place was immediately covered with leather but the beast did not live long after the operation[169].It was difficult to procure genuine musk. During Sultanate period it was only brought as a great rarity as a present to kings and great rulers. It was mixed with saffron and little camphor as a remedy for headache. It was used with other drugs such as testicles of beaver (castoreum) as a stimulant snuff in paralysis and diseases of brain, for which it was also used by rubbing it. Smelling it was done to counteract the evil effects of poisons; e.g. bish (aconite).It was also very useful collyrium in diseases of the eye. It was also used as a cardiac tonic removing palpitation, and faintness**.** It was used in case of dysentery and abdominal distension also. A suppository of musk was used to assist parturition[170]. Musk was among the rarest items of trade and the best kind and greatest quantity of it came from Bhutan and from here it was transported to Patna where it was sold[171].

Elephant hide and fat:

Elephant fat was used for strengthening weak and shriveled nerves by rubbing it on the surface of skin. Further, the smoke produced by burning elephant's hide and toe-

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166 Jahangir, op.cit pp. 148 & 240..
167 Musk is greasy secretion with a powerful odour, produced in a glandular sac of the male musk deer.
168 Badaoni, op.cit. p. 172.
169 Thevenot and Careri, op. cit. p. 28.
170 Badaoni, op.cit. p. 172.
171 Tavernier, *Travels in India*, Vol 2, Tr. V. Ball, ed. William Crooke, New Delhi, 1977, p. 112.

nails mi with stag's horn was very effective for treating haemorrhoids; it was also used for reducing inflammation, as pain reliever and for removing hard lumps[172].

Human fat:

Human fat was also used to cure patients[173]. Manucci has written about how he was able to procure human fat for medicinal use. It involved an operation of the person from which it was taken[174].

Raw silk:

It was also used in manufacturing certain medicinal syrups. The syrup prepared from it was called *Sharbati Abresham*. It was refreshing and was used as heart stimulant[175].

Chemical and mineral sources:

Mercury as medicine:

Mercury was also used as medicine. Babur mentions about the use of quicksilver and says that it was used as drug in India from ancient times to treat internal diseases[176]. It was used to aid digestion and to strengthen the stomach. Francois Bernier gives account of certain *faqirs*, whom he describes as extraordinary personages who were well acquainted with the art of making gold, and they could prepare mercury in so admirable manner that when a grain or two of it was swallowed every morning, it restored a diseased body to vigorous health and so strengthen the stomach that it could be fed with desire and digest with ease[177].

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172 Manucci, Vol3, op.cit. p. 280.
173 Sir Jadunath Sircar, *The short history of Aurangzeb*, Calcutta, 1962,p. 431&432.
174 Manucci, Vol 2, op.cit. , 1907, p. 196.
175 Tasneem ahmad, op.cit. p.261.
176 Babur, op.cit. p.619.
177 Francois Bernier, *Aurangzeb in Kashmir (Travels in Mughal Empire*), Ed. D.C Sharma, New Delhi, 1988, p. 19.

Salt:

Salt was used in preparation of medicines due to its curative properties[178]. According to the auther of *Mirat-i-Ahmadi*, "the salt procured from Khambayat resembles coarse sand, and possessing a considerable degree of bitterness of taste, has the virtue of recruiting the strength of debilitated persons[179]". Salt of Lahore was quite famous[180].

Copper sulphate (*Nila tutiya*)**:**

It was effective against snake-bite. Eight to twelve grains of it were administered in ghee or butter immediately after the bite was received. It showed its result with in few hours[181].

Alum (*phitkari*)**:**

It is called z*ak-safed* in Persian and *shabi yamini* in Arabic. Dusty water can be cleaned by it.[182] Alum was also used in preparing medicines. It was found abundantly in the soils of Saurastra or modern Surat[183]. It was effective against weakness of vision[184].

Ab ahan tab:-

In *Miratul-Istilah* it is described as water in which red hot piece of iron was put two or three times and then the water was cooled and drunk and according to the belief of physicians this water was very beneficial and light. It was also called *abi-tila-tab*[185].

Bezoar stone[186] and Snake-stones:

There were some medicinal stones used in medieval India, for example; *bezoar* and *snake-stones*.Tavernier writes that *bezoar* was among the rarest items of trade and

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178 Abul Fazl, Vol1, OP.cit. pp. 625. Hameeda Khatun Naqvi, op. cit., p. 241.
179 *Mirat-i-Ahmadi*, Eng.tr. Ali Mohammad Khan ed. James Bird, London, p. 102.
180 Hameeda Khatun Naqvi, *Urban centres and Industries in upper India*, Bombay, 1968, p. 47.
181 Mrs. Meer Hasan Ali, op.cit. p. 308.
182 Tasneem ahmad, op.cit. p. 254.
183 D.P Chattopadhyaya, *History of science, Philosopy and culture in Indian Civilization*, Vol3, Part1, in *History of science, Technology and culture A.D(1000-1800)*, ed. A.Rehman, New Delhi, 2007, p.152.
184 Tasneem ahmad, op. cit. p. 254
185 Ibid, pp.1.
186 Bezoar, Persian: *Padzahr*, Arabic: bazahr, badizahr

most precious of which was found in Asia[187]. According to Tavernier in India bezoar stone came from Golcunda. It could be found in the stomach of goats that used to feed on certain plant having buds which after eating by the goats concretes in their stomach and it took shape according to the shape of the buds. In *V.Balls* translation of *Travernier's travels in India* it is mentioned that bezoar stone was very much in used in medicine in medieval India but at present it has no medicinal value. In *Storio do Mogur* Manucci mentions about administering of bezoar stone to a lady during her illness[188]. Tavernier also writes about snake stone that Indians believed that it used to grow on heads of certain snakes but according to Tavernier these stones were actually composed of some drug and it was the priests who made these and make the people believe otherwise. These had excellent virtue of extracting all the poison when one had been bitten by a poisonous reptile. Tavernier writes that he had bought many of these from the brahmans who were the only to sell those[189]. Barbosa has also mentioned about the carrying of *bezoar* stone by the *Jogis* with them. He has written that the stone was of the size of almond found in the stomach of a buck-goat. It was moistened with rose-water and was given to the person who had taken poison[190]. In *Muntakhab ut twarikh* it is mentioned that *bezoar* stone was popularly supposed to be carried by a serpent in his head. But this stone was actually the snake stone which Badaoni has confused with bezoar stone. These stones were of different colours and texture. In order see whether the stone was real, it was placed upon the bite of a snake, and if it got stuck to the bite, it was real one. Likewise; if milk was poured on it, the milk got coagulated and changed in appearance and also it was believed that if some of these stones were kept in milk, the milk didn't coagulate. After sometime when all the poison had been extracted, the stone fell off and after that it doesn't coagulate the milk. The colour of stone changed while extracting poison and when it was put in milk it returned to its original colour. Another test for it was that if it was rubbed upon black or blue woolen cloth, the cloth became white and if it was rubbed for a long time, the cloth became black and all whiteness disappeared[191]. In Shahjahanama , it is stated that Shahjahan had ascertained the efficacy of *bezoar* stone in curing pestilence

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[187] Op.cit, Tavernier, Vol 2, p. 112.
[188] Op.cit. Manucci, Vol2, p.166.
[189] Op.cit. Tavernier, p. 120.
[190] Op.cit. Barbosa, Vol 1, p. 236.
[191] Op.cit. Badaoni, Vol 1, p. 117 & 118.

and it was corroborated by experience that many people who were on the verge of extinction from that virulent disease had regained their health by the application of this stone[192].

Treatment of Plant and animal diseases:

Besides treating human diseases the awareness of treating plants can be traced since ancient times. This is evident from the compilation of Vrkshayurveda by Surpala compiled in 12th century B.C. shows had two sections, one on the diseases of trees (*roga janana*) and other on the treatment of their diseases (*cikitsa*)[193]. The physicians in medieval India also were expert in treating plants. They could diagnose a plant disease by just embracing its trunk For example we get a reference in *Waqiat e Mushtaqi* that how *Malikul hukama* treated a dried up plant by digging the ground around the tree and poured some molasses extracted from various vegetations in it daily and after few days the tree became green again[194]. Veternary hospitals were established to cure animal diseases. In *Sirat-i-Firozshahi* cure of treating various animal diseases is given[195].

Thus it can be concluded that people suffered from different kinds of diseases in medieval India. Epidemics like pestilence that devastated whole population within days occurred frequently. But in course of time attempts were made to discover its treatment. For example; Akbar's ascertaining of the use of bezoar stone as its treatment. There were different methods of diagnosis and different sources of medicines like plant, animal and chemical sources to treat these diseases. For the manufacture of medicines, there was no problem of raw-material and preparing of these medicines led to economic development in terms of crop-production. For example; besides being a part of culture, the health benefits of betel leaf were well-known and different varieties of betel leaf were grown in medieval India. Opium was highly prized as having medicinal value and was also exported to Europe as it was considered a valuable medicine there. Besides these medicinal value of some wild plants was also recognized. For example; Balsamodendron mukul was found in Cambay (Gujrat) and from it was produced Indian Bdellium.

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192 Op.cit. Inayat Khan, p. 500.
193 Op. cit. D.P Chattopadhyaya, Vol3, Part 1, pp.315,330.
194 Shaikh Rizqullah Mushtaqi, op.cit. p. 226.
195 *Sirat-i-firozshahi*, p. 240.

Chebulic myrobalan which was a wild fruit that grew in Gujarat and the hills of Srinagar was exported from India to Europe. Taxes were imposed on various articles which included medicine and collected in market place which further had a direct impact on growth of economy. Besides human diseases, there was consciousness of occurrence of plant diseases and treating them was also practiced.

CHAPTER – 5

Chapter-5

Political Patronage to Medical Science under Delhi Sultans and Mughal Emperors

Medical science got patronage from the rulers of successive dynasties in India which led to its development. Position of physicians was well recognized in the society since ancient times. In Chandragupta Maurya's time, doctors[1] with their medicines (and dressings etc.) had to be in the position at the hindmost of the battle field. The hospitals in his capital were supplied with medicines.[2]Doctors like Manaka were appointed as chief physicians in the hospital of Baghdad.[3] Manaka is known to cure Khalif Harun al Rashid of Baghdad when he suffered from a serious disease and the Greek physicians failed to cure him. He was well versed in medicine[4].In medieval India any new discovery in medical treatment or introduction of an improved method brought fame and wealth to the ingenious physicians[5].There used to be one or more physicians in every royal court. These physicians not only treated the royal family but in their free time also recorded their own observations and experiments and after sizable collection presented these to their patrons in the form of written compendium. These books mostly dealt with clinical aspects. They made extensive study of the temperament and habits of people of India, of the herbs and plants and drugs readily available. They also made experiments with the locally available sources of medicine. They carried on their studies on these herbs and drugs, their therapeutic effects, uses, modes of administration, preparation of compound medicines etc. in their books[6]. This shows that the research in medical science was also encouraged.

The Delhi Sultans and The Mughal emperors provided state patronage to scholars and even enrolled some as state employees and court physicians[7]. Hasan Nizami

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1 In Sanskrit surgeon was called *bhisak*.
2 P.N Chopra, *India an encyclopedic survey*,New Delhi, 1984, P.206,207.
3 Meera Singh, *Medieval History of India*, New Delhi, 1978, P.12.
4 Asoke K. Bagchi, *Medicine in medieval India*, Delhi, 1997, p.50.
5 K.M Ashraf, *Life and Conditions of people of Hindustan*, Delhi, 1970, p.157.
6 TazimuddinSiddiqi , *Unani medicine in India during Delhi Sultanate*, *Indian Journal of History of Science*, Institute of history of medicine and medical research, New Delhi, 15(1), 1980, pp. 18-24.
7 Mehr-e-Alam Khan, *Unani medicine in India, Central council for research in Unani medicine*, New Delhi 2006, p.3.

mentions about skill of a physician in curing some diseases that require expertise which indicate the development of medical practice under Delhi Sultans. He writes, “There was a physician of enlightened mind who displayed extraordinary skill in curing ailments. He was as successful as Jesus in treating various diseases. By his perfect mastery of medical science he could remove the mark of leprosy from the face of moon, and by virtue of his long experience he could cure the sun of his jaundice”[8]. The physicians got their salary in the form of cash or revenue free land grants and in the latter case the revenue got from that land became their income. Taking the reference from *Mirat-i-Ahmadi*, Tapan Raychaudhuri and Irfan Habib write that there were two physicians in the state hospital of Ahmadabad having 10 and 8 annas of pay respectively. In some regions physicians constituted an important caste, for example; In Bengal physicians were organized into a caste who stuck to their traditional occupation. Physicians were also employed by the *mansabdars* to look after their troops and those physicians who had numerous clients used to be well-off[9]. In some towns besides professional physicians there used to be one or two men who had some knowledge of medicine and every morning they used to seat themselves in the market place or at the corner of the street and used to treat the people by providing various remedies[10].Besides court physicians there were ordinary *hakeems* who were trained in the Arabic texts of madrassas, *vaids*, Sufis and *faqirs*. These also received state patronage as the manager of welfare of the society by providing of health services to the ordinary people[11] . So, the view of Tavernier that most of the physicians used to serve the royal court while mentioning about Golconda and Bijapur is doubtful[12].Rulers supported the hospitals, medical libraries, schools and important hakims[13]. The rulers used to invest in medical learning in the same way as they used to encourage political literature to maintain the status of king[14]. In the courts of Delhi Sultans, patronage was provided to translate Sanskrit texts on medicine into Persian, and

8 Hasan Nizami, *Taj ul Maathir*, Tr. Bhagwat Saroop, Delhi, 1998, p. 121.

9 IrfanHabib and TapanRaychaudhuri, *Cambridge economic history of India*, New Delhi, 1982, pp. 302 & 467.

10 Tavernier, *Travels in India*, Vol1, Tr. V.Ball, Ed. William Crooke, New Delhi, 1977, p.240.

11 SeemaAlavi, *Islam and healing: Loss and recovery of an Indo-Muslim medical tradition (1600-1900),* New Delhi, 2007, p.31.

12 Op.cit. Tavernier, Vol1, p. 240.

13 Jan Van Alphen and Anthony Aris, *Oriental medicine: an illustrated guide to Asian arts of healing*, Boston, 1996, p.50.

14 Op.cit. Seema Aalvi, p.34.

Muslim physicians learnt Sanskrit to access medical manuscripts. Many of their books written in Hindustan were modeled on Persian encyclopaedia style that borrowed freely from many sources. For instance; During Muhammad Tughlaq's reign Zia Muhammad Masood Rasheed Zangi learnt Sanskrit and wrote *Majmua-i-Ziae*, which reflected his use of important Persian manuscripts as well as Sanskrit texts. Likewise during Sikandar Lodhis reign *Argarmahabedak* (the science of medicine and treatment of diseases) was translated into *Tibb-i-Sikandari*[15]. During the reign of Delhi Sultans, among different officials in the royal household was *Malik-ul-Hukama* (Royal physician)[16].The first Unani physician, whose name is found in Indian history, is Ziauddin Abdal Rafi Hirwi, a court physician of Sultan Khusrow Malik, the ruler of Lahore. He was famous as a skilled and prominent physician even during the rule of Shihabuddin Mohammad Ghori (1206 A.D).[17] Persons having proficiency in various branches of medicine were there such as; pharmacy (*Davasazi*), Surgery (*Jarrahi*), Physiology (*Marifat-ul-Aza*), anatomy (*Tashrith-ul-Aaza*), therapeutics (*Tashkhis-o-mualijat*) etc. There were physicians, oculist (*kuhhal*), phelobotamist (*fassed*) and bone setters (*shikastband*)[18].

Patronage under Delhi Sultans:

During the Turkish dynasty (1206-90), the development of Unani medicine was meager owing to constant fierce struggle for the occupation of the throne of Delhi, the consolidation and the expansion of dynastic rule. The rule of Iltutmish was exceptional in this regard. During his rule we come across a medical work, *Kitab-al-Saidana by* Alberuni, which was translated by Abu Bara b. Ali b. Usman Asfar-al-kashani from Arabic into Persian, the first medical translation rendered in Sultanate period and even preserved today.

Unani medicine started growing during the reign of Jalaluddin Khilji. A famous physician of his reign was Sheikh Fiqih Jamaluddin Maghribi[19]. Besides poets and

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15 Seema Alavi, *Islam and healing: Loss and recovery of an Indo-Muslim medical tradition(1600-1900)*,New Delhi, 2007, p. 29.
16 Ibid.p 47
17 Op. cit. D.P. Chattopadhyaya, p.326.
18 B.N Luniya, op.cit. P.267.
19 D.P Chattopadhyaya, *History of Science, Philosophy and Culture in Indian Civilization*, Vol IV, Part 2, New Delhi, 2001, p.327

scholars distinguished physicians and astronomers flourished under Khilji and Tughlaq Sultans. Some of the prominent ones were Badruddin Damishqi (of Damishq), Hisamuddin Marikeli, Maulana Hamiduddin Murtiz, Maulana Sadruddin, son of Maulana Hisamuddin and Maulana Azizuddin Badaoni. Maulana Sadruddin was so talented that he could diagnose the disease by looking at the face of sick person. There were notable Indian physicians also, among whom Nagorian Brahmans, Jayoteyang and Mahchandra were prominent physicians. Jaja was renowned surgeon.[20] The development of Unani medicine was more prominent during Alauddin khilji's reign (1296-1316) than in earlier periods of the Ghaznavi, Ghori, and Slave dynasties.[21] During the reign of Alauddin Khilji 45doctors skilled in sciences were professors in the universities[22].The political stability and economic prosperity during his period attracted a large number of men of learning and scholarship from Iran and Central Asia. The famous historian Ziauddin Barani describes: "Such matchless men of letters and scholarship are present in Delhi, who cannot be found in Samarqand, Baghdad, Egypt, Khwarizm, Damascus, Tabriz, Isfahan and Ray, rather in the whole inhabited world". The same writer has given an account of Unani physicians of Alai period. He says: *Atibba* (physicians) of Alai period had complete skill in medicine and there can be no comparison in them and Hippocrates[23] and Galen[24] in treatment of diseases[25]. Badruddin Damishqi, a prominent physician of Alauddin Khilji's reign was an unequalled physician of his time in skill counseling, pulse feeling and examination of urine.[26] The Indian physicians of Delhi learnt *Tibbi* medicine from him. He was so much proficient in urine examination that if urine of different animals were intermixed, he could recognize from the smell that the sample was taken from different animals. Another renowned physician after him was Maulana Hamid Mautraz. He was considered an excellent orator on medical treatment and his lectures

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20 Op.cit. B.N Luniya, P.267.

21 Op.cit. D. P Chattopadhyyaya.P.327.

22 Ferishta, *History of rise of Mohamadan power in India*, Vol 1, Eng. tr. John Briggs, London, 1829, Rept.Calcutta 1966, p.215.

23 Hippocrates (b.460 B.C) was a Greek surgeon. He is called 'Father of Medicine'

24 Galen was a physician born in Pergamum which was ancient Greek city (modern-day Bergama, Turkey). He later went to Rome and made his mark as a practicing physician. His contribution to medicine rate only next to those of Hippocrates.

25 Prof. Altaf Ahmad Azmi, *History of unani medicine in India*, New Delhi, 2008, pp.4-6.

26 Op.cit. D.P Chattopadhyaya, p. 328.

were based on *Al-Qanun*[27]and *Qanuncha*[28] and other treatises. Hakeem Rashid-u- Din Fazl Ullah was the court physician of Mongol ruler Abaqa He became a close friend of Alauddin Khilji during his visit to India. The sultan regularly sent presents of drugs and oils which were a peculiarity of India[29].

As in the days of Alauddin khilji, Unani medicine made notable progress during Tughlaq dynasty. The rulers of this dynasty besides giving patronage to medical science were themselves interested in it and were good practitioners. The founder of Tughlaq dynesty, Ghiyasuddin Tughlaq Shah (1320-1325), was not only interested in the development of Tibb but also achieved proficiency in it. After his victory over Khusro Khan, he himself bandaged the wounded soldiers and treated them.

Mohammad bin Tughlaq (1325-51) was proficient in different branches of learning like logic, philosophy, mathematics, astronomy and physical sciences. He was well versed in the science of medicine[30]. With regard to effectiveness of his prescriptions he entered into long discussions with famous physicians of his age[31]. No learned or scientific man, or scribe, or poet, or wit, or physician, dared to argue with him about his own special pursuit, nor would he have been able to uphold his position against throttling arguments of the Sultan[32] . He established hospitals for the sick and even went so far as to attend himself to any with any remarkable disease[33]. Hakim Khwaja Shamsuddin Mustaufi and Hakim Zia Mohammad Masud Rashid Zangi Umar Ghaznavi alias Mubarakbad were court physicians of Sultan Mohammad bin Tughlaq. A clear picture of the state of medical science during this period is obtained from a Persian manuscript called *Majmua-i-Ziae* (collection by zia) compiled by Zia Mohammad, a court physician

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27 *Al Qanun* or The Canon of Medicine is an encyclopedia of medicine in five books compiled by Avicenna (Ibn Sina).

28 *Qanuncha* or Little Canon was written by Mahmud ibn Muhammad ibn Umar Jaghmini, a 14th century Persian physician, who was at Jaghmin, a village in Khwarezm (Khiva), current day Uzbekistan. It is a reference to Avicenna's *al-Qānūn*.

29 Op.cit. Asoke K.Bagchi, p.73.

30 O.P jaggi, *History of science and technology in India: Medicine in medieval India*, Vol8, Delhi, 1977, pp.107, 108.

31 Agha Mehdi Hussain, *Tughlaq dynesty* , New Delhi, n.d.,p. 482.

32 Barani, *Tarikh-i- Firozshahi in Elliot and Dowson*, History of India as told by its own historians,vol 3, Calcutta, 1871, p.159.

33 Muḥ ammad Qasim Hindu-shah Astarabadi Firista, *Tarikh-i- Ferishta*, Vol1 , Eng Tr. John Briggs, London, 1829,p236.

of Mohammad bin Tughlaq which is a fusion of Unani medicine (*Tibb*) and Indian medicine (Ayurveda). He was well versed in Sanskrit and made complete use of Sanskrit medical literature, and this becomes clear where he has dealt with different aspects like the process of making calces (calcination), surgery and even astrology. It also has an account of horse diseases[34]. Ziauddin Naqshabi[35]was another physician of the period known to have composed two books *Kitab-fil-kulliyat wa Juziat* and *Kitab-fil-Sana at al-Tibbiya* (book of medical art). In the latter author has dealt with many herbs and shrubs by giving Indian names to them[36]. Isami gives a reference of Ibn Sina in his book *Futuhus Salatin* which shows that the court historians tried to convince the Sultan that they recorded the achievement of medical experts of the world which signifies that the Sultan followed a policy of medical science on world pattern[37].

The reign of Firoz Shah that extends approximately over four decades is an important period in the history of Delhi sultanate. It occupies an important place in history of India. Firoz Shah's reign was a period of peace and prosperity of Hindustan, and through his patronage cultural activities increased significantly. After coming to the throne he, indeed had a challenging task of raising Delhi sultanate from the state of democratic disorder in which it had fallen since the closing years of his forerunner's reign. So instead of wasting money on wars he resorted to do some public welfare activities like building canals, reservoirs, new cities, roads, mosques, madrasahs and hospitals[38]. Firoz Shah Tughlaq had a great skill in art and craft including therapeutic art of Unani medicine. His interest in public welfare was apparent from the writing *Tarikh-e-Firozshahi*. Like Muhammad Tughlaq, Firoz Shah Tuglaq established many hospitals during his reign. The king constructed 50 dams, 40 mosques, 30 schools, 20 monastries, 100 palaces, 115 hospitals, 100 mausoleums, 10 public baths, 150 wells and hundred bridges as well as a large number of gardens. He gave grants for their upkeep[39]. He was so expert in Unani medicine that he himself used to treat the patients as a *hakeem* or

34 Op. cit. D.P chattopadhyaya ,p.329.
35 Ziauddin Nakshabi came from Nakshab to India after the invasion of Mongols and settled in Badayun, and died there in 1351. He had deep knowledge of religious sciences besides medicine.
36 Op. cit. O.P Jaggi, p.110.
37 Isami, *Futuhus Salatin*,Vol 1, Eng. Tr. By Agha Mahdi Husain, Calcutta, 1898.p 29.
38 Firoz Shah Tughluq, *Futuhat -i-Firozshahi*, Eng Tr. AzraAlavi, Delhi, 1996, p 13.
39 Op.cit. Altaf Ahmad Azmi, *History of unani medicine in India*, p. 151.

Unani practitioner. *Futuhat-i-Firoz Shahi* contains many such anecdotes of Firoz Shah Tughlaq. To quote him:

"Moreover, God Almighty gave me the opportunity to establish a hospital to which rich or poor who were ill and suffering from any ailment could come. Here doctors were in attendance so that illness could be diagnosed and medicines, treatment and diet prescribed. The expenditure on medicines, and food was defrayed out of the endowments established for this purpose. All patients, whether resident or travellers, high or low born, freemen or bondsmen come there for treatment and by the grace of God Almighty are cured of their diseases."[40]. He appointed proficient and competent doctors (*hakeems*) in the hospital for the treatment of unwell. Money was allocated for the purchase of medicines and for the payment of salaries of the physicians. He directed the physicians to work hard in diagnosing the diseases and cure the troubled patients with suitable medicines, as soon as the sick reached them. Medicines had to be provided for strengthening and restoring health and the stamina of the body. The doors of benevolence and kindness were open to all nobles and masses. Patients from all directions and large numbers used to rush to the hospitals. When the sick finally arrived at the hospital after necessary rest and recovery of their breath at various resting places during the journey, the servants (attendants and doctors) at the hospital used to attend to them properly and listened to their ailments with great sympathy and good wishes. They treated the patients for their diseases. They made all efforts to provide every item for the treatment and restored the sick to good health. In addition, the expert physicians posted in the hospitals eagerly awaited the coming of more patients. Soon after their arrival, the doctors used to diagnose the ailments and administered necessary medicines, syrups and tonics and treated the sick with such ease and sympathy that the patients soon got well. The patient after his recovery thanked God and prayed for the long life of the sultan. Even that patient who could not offer prayers on account of his illness was enabled to perform the necessary formalities associated with the offering of the prayers and doubly thanked God and sought long life for the sultan. The holy prophet (PBUH) had rightly observed that to provide the happiness to the believers is the best form of alms given to earn the pleasure

[40] Op. cit.*Futuhat -i-Firozshahi*, p.31.

of God. The Sultan bestowed lands and villages for the maintenance of *Diwan-i-Khairat* and hospital (*Shafakhana*)[41]. All types of diseases were properly diagnosed and treated free .The list of diseases treated as given in *Sirat* shows that from lengthening of hair to wounds in kidney and laprosy there was hardly any ailment which was not treated at Firoz Shah hospital[42]. A public announcer (*Chaush*) used to announce and invite the patients to take advantage of state aid[43]. The income of some prosperous villages was set apart for charity and medical facilities[44]. The sum of 36 lakhs of the *tankas* out of the revenues of the kingdom was appropriated for the paying the wages and 4200 aggrieved persons received monthly allowances. *Sirat-i –firozshahi* (composed in A.D 1370) deals with different types of medicaments which were kept in the hospital. From the account it also clear that Firoz shah used to visit it personally and treated the patients. He had given an order that everyone suffering from insanity should be captured, chained and kept in hospital and treated with appropriate medicine prescribed by him, which were tried and found useful. He also recommended that a special diet should be provided to them which Sultan recommended himself. This book also throws light on the fact that he had established mobile as well as fixed hospitals and had appointed physicians for each of them[45].

Firoz shah Tughluq had a good expertise in medical science. He was skilled bone setter and is said to have successfully bandaged the fractures of several of his associates in hunting expeditions. He was profoundly interested in ophthalmology and prepared collyrium composed of skin of black snake and other drugs, which was known as *Kohl-e-Firoz Shahi* and it was quite effective in many diseases of the eye.[46]

During of Firuz Shah's reign the science of surgery was also well developed. New instruments of operation were invented. There was an instrument which was used to find out the position of child in the womb of mother.[47] This was the golden period of Unani medicine. Numerous books were written during that period. One such was *Tibbi-e –*

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41 Afif, *Tarikh-i-Firozshahi*, tr. R.C. Jauhri, Delhi, 2001,p.200.
42 Khaliq Ahmad Nizami, *Royality in medieval India*, New Delhi, 1977, p. 103.
43 Op.cit. Agha Mehdi hussain,p.243.
44 Op. cit. *Futuhat -i-Firozshahi*,p.13.
45 Op.cit. O.P. Jaggi, p.110.
46 Ibid. p. 108.
47 Op.cit. Khaliq Ahmad Nizami, p.103.

Firuzshahi, a medical treatise which was composed in A.D 1388, according to the dictation of Firuz Shah. This according to the auther of *Sirat i Firozshahi* was a clear proof of his mastery of the science of medicine. This book gives treatment of different ailments which have not been taken into account even in *Al Qanun* of Ibn Sina and *Dhakhirah-i-Khwarizmshahi* of Ismail Jurjani.[48] Another treatise of the period is *Rahat-al-insan* (repose on human beings) composed in A.D 1385 by hakim Illias –bin-Sahib (also known as zia), an eminent physician of the time. It was dedicated to Firozshah. The influence of Indian medicine (Ayurveda) is quite perceptible in this book. The auther has given hindi names of diseases also. For example; while describing *Tap-i-Sawdavi*, a kind of fever caused by black bile; he has written; *Tap-i-sawdavi* is called *Pat jar* in Hindi. He has frequently given Hindi names of drugs; for example, He writes medicament for *Tap-i-sawdavi* as; "*Satwar-3 diram, Bansa-3 diram*; pound each item and boil in six bowls of water until one bowl remains". An interesting thing about this book is that author has prescribed drugs as well as amulets for every disease. The author has also given some talisman. It shows that both tradition and sciences were used together to make people concerned with the use of medicine. The author has also written that the contemporary physicians were at loss to treat many diseases because they did not know how to get rid of evil spirits which, most people thought were the cause of all diseases[49].

Afif writes that Firoz shah attached great importance to Karkhanas. Sultan maintained 36 *Karkhanas* and did his best to collect raw materials for them. One of the *Karkhanas* was *Daroodar Khana* or medical store[50]. Firoz shah was greatly interested in spread of education[51]. He had diverse literary interests. The Sultan did away with the darkness of ignorance by the light of education. During his reign *Tibb* (medicine) was included in the curriculum besides other subjects[52]. Firoz Shah also established number of madrasas; among which 30 were in Delhi alone[53]. He was credited to establish for the first time the Unani *tibbi* madrasa (Unani medical school) inside the *deeni* madrasa

48 Op.cit. Prof.AltafAzmi, *History of unani medicine in India*, p.11. Ismail Jurjani was a Persian 12th century royal Islamic physician from Gorgan Iran. In addition to medical and pharmaceutical sciences, he was also adept in theological, philosophic and ethical sciences.

49 Ibid. p. 13.

50 R.C Jauhri, *Firoz Shah Tughlaq*,1999, Jalandhar, p.123

51 Manazir Ahmad, Sultan Firoz Shah Tughlaq (1351-1388 A.D), Allahabad,1978, Pp.96-97.

52 Firoz Shah Tughluq, Futuhat -i-Firozshahi, Eng Tr. AzraAlavi, Delhi 1996, p.15.

53 Op.cit .Prof..AltafAzmi, *History of unani medicine in India*, p.14.

(religious school), an institution to impart education and training in Unani system of medicine. Among such madrassas was *Madrasa-e-Firozshahi* which was located in the vicinity of Hauz Khas in south Delhi[54]. In this school besides religious sciences, mathematics, astronomy and medicine were taught as well[55]. Veterinary science also received consideration of Sultan. A work on veterinary art, *Kurratul Mulk* was compiled during his reign which was translated from the Sanskrit original work known as *Sapotar (Salihotra)*. He discussed the diseases and treatment of animals in a pamphlet entitled *Shikarnama i Firozshahi*[56] . Veterinary hospitals were also built by him[57].

After Firoz Shah Tughlaq, the rulers who ascended the throne successively were Ghiyasuddin II (1398-1389), Abu Bakr (1389-90) and Nasiruddin Muhammad (1390-94). After the death of Mahmud Shah (1394-1413), the last Tughlaq ruler, the Sultanate came to an end. Unani medicine suffered a setback after the reign of Firoz Shah as a result of political disturbances and lack of concern of last four Tughlaq rulers[58]. After the invasion of Timur in India in 1398 and 1399, he gave an order that each city of his territory should be provided with at least one mosque, one school, one inn and one hospital[59].

During Lodhi period also medical science made substantial progress. Sultan Sikandar took extraordinary interest in medical science. He also gave patronage to physicians and under his patronage books on Indian medicine were compiled. His minister Mian Bhowa was profoundly interested in medical science and compiled a treatise on Indian medicine called *Maadan-ul-shifa Sikandashahi*, also called *Tibb-e-Sikandarshahi.* It was compiled with the help of skillful Ayurvedic physicians and after consulting many Ayurvedic books and it was dedicated to the Sultan[60].MianTaha another physician also got Sikandar Lodhi's patronage. Sikandar Lodhi said about him 'Mian Taha is equal to one thousand men'. This remark was made owing to his vast knowledge. He was expert in *Ilm i Tibb* (science of medicine). Brahmans expert in medicine also

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54 Mohammad Idris. *The arrival of unani medicine in India around 12TH and 13th century*, www.delhiheritagecity.org/pdfhtml/intangible/md-idris.pdf

55 Op.cit.Altaf Ahmad Azmi, *History of unani medicine in India* , p.14.

56 S.C Raychaudhary*, Social ,cultural and economic history of medieval India,* Delhi, p.15

57 Op.cit. Mohammad Idris

58 Op.cit. AltafAzmi, *History of unani medicine in India*, pp.14-15.

59 Op. cit. Asoke k. Bagchi, pp. 74,75.

60 Op.cit. Altaf Ahmad Azmi, *History of unani medicine in India*, pp. 15&16.

came to get training from him[61]. Besides curing diseases, eminent physicians were also appointed on important posts. Forexample; Ibn Batuta writes about a distinguished doctor Ala-al-Mulk, who had come from Khurasan to India to join the King of India and had been appointed as governor at Janani (a large town on the bank of the river of Sindh) and province of Lahari in Sind[62].

Patronage under Mughals:

Mughals also gave their liberal patronage to medical science and hence it kept on flourishing. Babur and Humayun showed keen interest in the science of medicine. Babur who belonged to Farghana, Samarqand when established his rule in India tried to make a culture of identifying the substances having medicinal value. It is known that in Central Asia Unani and Irani or Persian medical sciences were realized by the society. Babur himself has given the concept of medicinal value in various products. For example; Babur describes a recent invention of curing boils by the use of pepper[63]. He also writes about the medicinal value of rose-water as a purgative[64], lemon as an antidote, and orange as stomachic[65]. He also writes about the medicinal value of quicksilver[66]. This shows he had interest to create medicine culture in Mughal Empire. Babur himself claims that he had employed several *hakeems* for the recovery of Humayun when he became ill during Babur's last days[67]. This also shows how Babur propagated the culture of medical science. Humayun himself used to treat the wounded when he fled to Iran. Though Akbar was not as learned as Babur and Humayun, he also showed interest in medical science and himself knew the art of healing[68]. Among Mughals Jahangir showed greatest interest in medicine. He knew the fundamental principles of *tibb*. He was a keen observer. In *Tuzuk-i-Jahangiri* we find Jahangir himself taking out intestines of a hunted lion and

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61 Shaikh Rizqullah Mushtaqui, *Waqiat-e-Mushtaqi*, eng.tr.Iqtidar Husain Siddiqui, New Delhi, 1993, pp. 193&194.
62 Ibn Batuta, *Ibn Batuta travels in Asia and Africa (1325-1354*), Eng tr. A.R Gibb, New Delhi, 1929
63 Babur, *Baburnama*, eng.tr. A.S Beveridge, 2vols, New Delhi, 1922, Reprint 1970, p.657.
64 Ibid. p.400.
65 Ibid. p. 511.
66 Ibid. p. 619.
67 Ibid. p. 701.
68 Op.citAltaf Ahmad Azmi, *History of unani medicine in India*, pp.44,45,60,61 &62.

examining the position of gall bladder in it[69]. Shahjahan and Aurangzeb also sought for its development and held the men of letters in high esteem.[70]In Mughal period, like other professions, the profession of physician also gained a distinguished position. The Mughals had great interest in patronizing them. The Mughal rulers extended their patronage to Persian physicians who fled to their court from Iran For example; During Babur's reign the physicians who came to India and settled here gained a prominent position. These were Hakeem Mir Abul Baqa, Hakeem Khwaja Nizamuddin Ali Khalifa, Hakeem Muhammad Beg, Hakeem Muhammad Ashraf Al-Hussayni and Hakeem Yusufi[71]. Among those migrants who were famous in Delhi during Akbar's reign was Abul Fath Gilani in 16th c, Hakeem Ayn-ul-Mulk of Shiraz in 17th c became court physician of Shahjahan and Muhammad Akbar Arzani who was also from Shiraz became the court physician of Aurangzeb. Some of them held important administrative and political positions at the court of Akbar and often other courtiers felt jealous of them. Hakeem Abul Fath Gilani was very close to the king and had a strong influence on him. He was appointed as Sadr and amin of the province of Bengal in 1579 and in 1580 he was entrusted with the *sadarat* of the capital and in the next year he was made its *amin* and *diwan*. He was honoured with the rank of 800 and this trend of appointing hakims to various political positions continued during the reign of Shahjahan and Aurangzeb[72]. Besides physicians migrating to India from Iran there were Indian scholars too who went to these institutions to study medical science. For example; Ahmad Thattavi went to Iran from Sind and studied in Shiraz under the guidance of Mulla Kamaluddin Husain and Mulla Mirza Jan, two renowned physicians of Shiraz and came back to India after completing his studies. Muhammad Akbar Arzani, a famous physician during Aurangzeb's reign also went to Iran for further studies in *tibb*. There was a hierarchical division in the profession of physicians working in the royal household also. There used to be a chief physician under whom a there used to be a number of subordinate physicians and surgeons who were bound to obey his orders. The chief physician was called *sarmad-i-atibba* or *sarmad-i-hukama* in Mughal terminology. There is reference to the title of

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[69] Op.cit. *Tuzuk-i-Jahangiri*, Vol1, pp.350,351.

[70] Op.cit.Altaf Ahmad Azmi, *History of unani medicine in India*, pp.145, 146, 179, 180, 207, & 208.

[71] Altaf Ahmad Azmi , Development of Unani medicine during the reign of Babur (1526-1530), *Proceedings of Indian History Congress*, session 52, New Delhi, 1992, pp.347-348.

[72] Op.cit. Seema Alavi, p.34.

Hakim-ul-Mulk (the chief of physicians) which was independent of the *mansab*. The physician holding highest mansab under Akbar was Hakeem Abul Fath, while the title of Hakeem-ul-Mulk was held by Hakeem Shamsuddin Gilani. Thus the highest *mansab* was not necessarily held by *Malik-ul-Hukama*. In 1627, on the accession of Shahjahan this title was held by Hakeem Abul Qasim, the son of Hakeem Shamsuddin Gilani. In 1662 Hakeem Mir Ardistani got this title followed by Hakeem Sadiq Khan who got this title during the reign of Aurangzeb[73]. There were physicians who directly joined the service of emperor or others who joined the service of nobles. Before joining any service the physicians had to pass certain tests in order to satisfy the employer. The selection was on the basis of experience and competence. For example; during Hakeem Ali Gilani's recruitment, Akbar ordered several bottles containing the urine of sick and healthy persons, and also of certain animals to be brought before the Hakeem for detection. The Hakeem diagnosed correctly and from that time achieved great reputation and became a close associate of Akbar. In the Mughal court Irani tabibs formed a predominant group in ethnic terms but during Akbar's reign the situation was slightly different as there was considerable number of Indian tabibs also. The Hindu *tabibs* were mostly brahmans by caste and experts in Ayurvedic rather than Unani *tibb*[74]. Among the Hindu *tabibs* attached to Akbar's court; Mahadev, Bhim Nath, Narayan and Sivaji are mentioned by Abul Fazl in *Ain-i-Akbari*[75].

Table showing number of physicians of different ethnic groups during Mughal period[76].

Reign	Persians	Indians	Others	Total
Akbar	15	14	13	42
Jahangir	11	07	01	19
Shahjahan	10	08	05	24
Aurangzeb	04	?	01	?

73 Op.cit. Nadeem Ali Rezavi, *physicians and professionals in Medieval India*, pp. 41& 42.
74 Op.cit. S. Nadeem Ali Rezavi, *Physicians and professionals in Medieval India*, pp.42 &43.
75 AbulFazl, *Ain-I Akbari*, Vol1, Eng. tr. H. Blochmann, New Delhi, 1989, p. 613.
76 Op.cit. S. Nadeem Ali Rezavi, *Physicians and professionals in Medieval India*, p.42.

Physicians received great recognition and we find their names in the Mughal histories along with the names of learned and intellectuals of the time; for example during Jahangir's time, Muqarrab khan attained a distinguished position. Besides a noted physician he was a nobleman and diplomat. He was also interested in horticulture, hunting, architecture etc. Muqarrab Khan's had attained such an expertise in the field of medicine that he was called by Farid Bhakkari as the Avicenna and Galen of the age. He was also known for treating elephant disorders. His two important works *Ain-i-Ashkar* and *Ain-us-Shifa*, based on Tibb-i-Sikandari, survive even today. The former deals with symptoms and diseases and the latter deals with drugs, their preparation, properties, temperament, degrees of efficacy and tested cures[77].A considerable number of physicians of Mughal period had attained their medical skill from various institutes in Lahijan (Gilan), Mashhad, Isfahan and Shiraz. Mir Muhammad Hashim better known as Hakim Hashim remained in these cities for twelve years for seeking knowledge before coming to India. In India he was a student of Hakim Ali Gilani. Likewise Gilani Brothers acquired knowledge in Iran before migrating to India[78].Physicians who joined the service of the emperor or noble but were not assigned mansab were appointed on daily (*yaumiya*) or annual (*saliyana*) salaries respectively. Those who were assigned mansab also received pocket-money (*zar-i-jeb*) to maintain a medicine-box (*kharita)* comprising essential medicines. The personal salary of physician could vary between Rs.300 per month i.e. 3600 per annum and Rs. 100,000 per annum. This shows that some physicians used to be quite well-off and their salaries might have depended upon the expertise in their profession. The salary of a blood letter (surgeon) varied between Rs.2 per day and Rs.700. There were physicians who didn't get cash salaries and were paid through *madad-i-maash* grants. Besides physicians there were civil and military officers in Mughal bureaucracy who were having knowledge of tibb and used to treat people frequently. Some of those were; Shaikh Faizi, Amanullah Khan Firuz Jang and Danishmand Khan and Khwaja Khawand, a noble of Humayun.[79]Mughals rulers of India were also great patrons of education and endowed lands for the opening of *maktabs* and

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77 Syed Nadeem Ali Rezavi, *An aristocratic surgeon of Mughal India: Muqarrab Khan in IrfanHabib, Medieval India 1: Researches in the history of India*,New Delhi, 1992, rept. 2000, pp.154-167.

78 S. Nadeem Ali Rezavi, *Physicians and professionals in Medieval India* in Deepak kumar, *Disease and Medicine in India*, New Delhi, 2001, Reprint 2012, p. 41.

79 Ibid. 45.

madrasahs. Medicine was one of the important subjects of curriculum during this period also. Akbar issued a *farman* that people should study medicine and thus acquire the skill[80].In Mughal India there were medical colleges where physicians were given training and these physicians carried private practice or they were invited by nobility to avail their service[81]. Taking Monserrate's reference Muhammad Qamaruddin in his work "A politico-cultural study of the great Mughals" writes that there was a famous school of medicine at Sirhind from which doctors were sent out all over the empire. Akbar accepted the advice of Abul Fath of establishing hospitals[82]. Also Nadeem Rezavi referring to *Maasir-i-rahimi* of Abul Baqi Nahawandi writes about madrasa of Hakim Shams and Hakim Mu'in at Thatta, where they also gave lectures on medicine. Some of the madrasas were opened by hakims also, and it is quite obvious that they must have taught tibb also in these madrassas. For example; there was a maktab of Hakim Mir Muhammad Hashim where he used to instruct on his own. Also Alimuddin Wazir Khan[83] built a madrasa at his native town Chiniot in Punjab[84]. Apart from this,veterinary science was also well-developed. Books were available for guidance in the treatment of elephants and horses, though there was no regular teaching in this subject. Shaikh Bina was one of the most skillful surgeons concerned with the treatment of elephants during that time[85]. Various treatises were written on hippology and hipiatry due to the interest in beautiful Arab horses, which further gave stimulus to the study of veterinary science. The best medieval treatise on veterinary art was *Kitab al Nasiri* of Ibu Al-Mundhir. Jahangir has mentioned about animal life in *Tuzuk-i-Jahangiri*. Different developmental stages of elephant embryo are given[86]. Jahangir was also interested in veterinary science. He himself extracted intestines of a lion and observed how the position of gall bladder was

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80 Op.cit. Abul Fazl, vol 1, p. 289.

81 Hameeda Khatoon Naqvi, *Urban Centres and Industries in upper India (1556-1803*), Bombay, 1968, p. 84.

82 Muhammad Qamaruddin, *A politico-cultural Study of the Great Mughals*, New Delhi, 2004, pp. 134.

83 Born in Chiniot, was a close associate of Shahjahan from his princehood and after his accession became his court physician.

84 Op.cit. S. Nadeem Ali Rezavi, *Physicians and professionals in Medieval India*, p. 41.

85 O.P Jaggi, *History of science and technology in India: Science and technology in medieval India*, Vol7,Delhi, 1977, pp.10,14 &15.

86 Ibid. p.73 &76.

different than other animals[87]. There were hospitals for treating animals and birds. For example; in the account of Thevenot and Careri it is written that in Ahmadabad there was a hospital for treating sick birds and animals. They were provided with proper feed, and once they recovered were sold[88]. During Mughal period also hospitals were established under royal patronage. One of the Jahangir's twelve ordinances was that hospitals should be established in all big cities and physicians should be appointed for healing the sick and the expenditure for this was to be given from the *khalisa* establishment[89]. During Shahjahan's reign a hospital was established at Delhi near Chowri Bazar where travellers were treated. Another hospital established by Shahjahan was at Ahmadabad where he appointed Mir Mohammad Hashim as head. In this hospital both Unani and Ayurvedic physicians were appointed for treating the poor. He also built hospitals at Aurangabad and Surat. Besides the rulers, nobles were also involved in building hospitals, Forexample; Saif Khan built a hospital complex at Jeetalpur during Jahangir's reign. It comprised a mosque, a madrasa and a *Shifa khana* meant for treating the poor. Also during his reign as mentioned above reign Hakim AlimuddinWazir Khan constructed a *Darul shifa*, a madrasa along with other buildings[90]. During Aurangzeb's reign also medical science progressed continuously. A large number of hospitals were established in the capital and other cities of his Kingdom. Many nobles and wealthy persons took part in such welfare activities. Forexample; Nawab Khair Andesh Kamboh[91] established a big hospital at Etawah where he appointed both Unani and Ayurvedic physicians. The poor and needy were given free treatment[92]. There were special provisions for the ladies who fall ill in the palace. When the royal ladies fell ill, they were taken to pretty set of rooms in the palace which was called the *bimaar-khanah* or the house for the sick. There they were nursed and tended with all care. The ruler himself used to visit the patient from time

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87 Jahangir, *Tuzuk-i-Jahangiri*, 2 Vols, Vol1,eng. tr. Alexander Rogers, ed. H. Beveridge, Delhi, 1989, pp.350 &351.

88 Thevenot and Careri, *India in Seventeenth century : The Voyages of Thevenot and Careri*, Vol2, ed. J.P Guha, New Delhi, 1976, p.20.

89 Op.cit. Jahangir, 2Vols,Vol1 p.9.

90 Op.cit. S. Nadeem Ali Rezavi, *Physicians and professionals in Medieval India*, p. 49.

91 Nawab Khair Andesh Khan was was the most noted member of the illustrious family of the Kamboh Nawabs of Meerut and flourished during the reign of Shah Jehan and Aurangzeb.

92 Op.cit. D.P Chattopadhyaya, p.352.

to time[93]. Before treating a patient of royal family the physician had to take the permission of the emperor to start the treatment. Also referring to Manucci Nadeem Rezavi writes that before being taken towards the royal harem the physician was covered from head to waist with a cloth and was accompanied by eunuchs. Also it was a general practice that princes and nobles did not get closer to the servants of other nobles and princes, particularly physicians. For example; When Diler Khan, who was enemy of Prince Shah Alam, fell ill and Manucci was called to treat him, the prince did not give him permission for the same[94]. In Mughal India physicians also accompanied the ruler in the battle field[95]. Besides the emperor, regional rulers kept surgeons during battles for curing their wounds fractures etc.[96].Hakims were rewarded by the ruler when they cured a member of the royality. For example; when princess Jahan Ara Begum was severely injured by fire, she received the treatment from Hakim Mohammad Daud who was rewarded with an enameled dagger and horse with gilt saddle in appreciation of the continued improvement in her condition[97]. When Prince Azam became ill and was treated by Hakim ul Mulk, the hakeem was rewarded with promotion of a *hazarzat* and was made 4-*hazari*[98].Besides hakims learned scholars were also honoured at the court. For example; Mulla ShafiaYazdi, a learned scholar when became known to Shahjahan, he was presented with robe of honour and 3000 rupees at his court[99].In addition to medical professionals, common people having knowledge of healing ailments were also rewarded after they had shown their skill. For example; When Jahan Ara got burns, she got treatment from a royal page named Arif chela who was later rewarded. Sometime after, her wounds broke out again and then she was treated by a mendicant named Hamun of Hissar district who was called upon by Muhammad Ali, the faujdar of Hissar. The plaster applied by him gave instant relief and after some days Jahan Ara regained her health and the mendicant was weighed against gold and so a man who had always been in want of

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93 NiccolaoManucci, *Storio do mogor or Mogul India (1653-1708*), Vol 2, eng tr. William Irvine, London, 1907, p. 319.

94 Op.cit. S. Nadeem Ali Rezavi, *Physicians and professionals in Medieval India*, p. 45.

95 Ibid. p.50.

96 Saqi Mustaid Khan, *Maasir-i-Alamgiri*, tr. Jadunath Sarkar,New Delhi, 1986, p.176.

97 Inayat Khan, *Shahjahannama*, eng.tr. A.R Fuller, ed. W.E Begley and Z.A Desai, New Delhi, 1990, pp. 317.

98 Saqi Mustaid Khan, *Maasir-i-Alamgiri*, tr. Jadunath Sarkar, New Delhi, 1986, p.218.

99 Op.cit.Inayat Khan, p.451.

even evening meal was bestowed with money, robe of honour, a horse and a female elephant. Also Muhammad Ali was given the title of Khan for bringing Hamun[100]. It shows people who knew the art of healing could gain a better position in the society by receiving patronage by the ruler for serving the state. Besides Persian physicians, European physicians also received patronage during Mughal period. Bernier and Manucci were among those. Francois Bernier was employed at Delhi (1659-66) by Danishmand Khan, the scholarly noble of Shahjahan and Aurangzeb. Bernier as physician of Dara Shikoh explained to him in detail Harvey's discovery of blood circulation and Jean Pacquet's discovery of conversion of chyle into blood. He also dissected sheep to explain these things[101]. Persian physicians had a feeling of jealousy for European physicians. Manucci writes that Persian physicians did not have confidence in or admit that European physicians know anything about medicine. He has written about the ill treatment of Venetian physician named Angelo Lengrenzi by the chief physician Muhammad Muqim in the court of Shah Alam[102].Besides receiving patronage, we get reference of physician at Allahabad who was being expelled from service by the governor because of his misconduct with his own family but was later called back because of the ill-health of the governor. This also shows the dependence of ruling class on the service of physicians[103]. There is another example showing the dependence of rulers on physicians i.e. when Taqarrub was retired and his son dismissed by Aurangzeb when he cured imprisoned Shahjahan but when Aurangzeb fell ill he was called back to service and the dismissal of his son was revoked[104]. Also sometimes the *mansab* of the physicians was reduced if there was any complain against them[105]. The physician joining service of state or a noble was not likely to be bound to his patron, he could change his employer at his will, For example; Hakim Muhammad Husain Gilani joined the service of Mahabat Khan after migrating to India, after some time he joined Khan-i-Zaman Bahadur. After that he joined the service of Adil Shah of Bijapur where he remained in service for 10 years. Later he joined Khan-i-Duran. Similarly Hakim Momena Sherazi joined the service of Mahabat

[100] Ibid. pp.310, 321 &322.
[101] IrfanHabib, *Medieval India: The study of civilization*, New Delhi, 2008, Reprint 2009,2011, p. 200.
[102] Niccolao Manucci, *Storio do Mogor*, Vol 4,eng. tr. William Irvine, Calcutta, 1907, Rept. 1967,pp. 250,251,252.
[103] Op.cit. Tavernier, Vol 1, p.96.
[104] Op.cit. S. Nadeem Ali Rezavi, *Physicians and professionals in Medieval India*, p.46.
[105] Op.cit, Jahangir, 2 vols, Vol1, p. 172.

Khan after coming to India. In 1662he was in the service of Bahadur Khan, the subadar of Allahabad. In1665 he joined the imperial service and became the chief physician treating Shahjahan who was suffering from illness[106].Women having knowledge of medicine also got patronage from the ruler during Mughal period, For example; Sati-al-Nisa was a female physician at Shahjahan's court. She was the personal attendant of the Mumtaz Mahal. Due to her intelligence and conduct, she was promoted to the office of 'seal keeper'. She was also assigned the task of teaching Jahan Ara Begum. She had a strong influence in the palace. After the death of Mumtaz Mahal, she was appointed as *Sadr-i-Kul* of the royal apartments. She was well versed with art of healing and was expert in treating complicated diseases[107].

Thus it can be concluded that medical science was patronized by the ruling class from ancient times owing to its importance in the well-being of an individual and it kept progressing this way. A number of prominent physicians came forward which were compared with Hippocrates and Galen. Both Mughals and Delhi Sultans were great patrons of medical science. A number of books on medical science were written during their reign and it was also included in the school curriculum. Research on medical science was encouraged. Social status of physicians was well recognized. Besides professional hakims, those who were having knowledge of medicines and worked for welfare of society were also patronized by the ruling class. Women having knowledge of curing diseases too received patronage in Mughal India. Besides giving patronage to medical science, they were great practitioners themselves.

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106 Op.cit. S. Nadeem Ali Rezavi, *Physicians and professionals in Medieval India*, p.46

107 Op.citAsoke K. Bagchi, pp.101 &102.

Table showing some eminent Hakims during the reign of Delhi sultans and Mughals

RULER	HAKIM	ABOUT THE HAKIM
Iltutmish	Hakeem Shamsuddin	He was a well experienced physician in his reign. When Khwaja Qutubuddin Bakhtiyar Kaki fell ill, he was called to treat him.
JalaluddinKhilji	Sheikh Fiqeeh Jamal al- Din Maghribi	He was native of Garanata. He accompanied IbnBatuta to see the palance of Delhi sultan, named “Koshek Lal”.
AlauddinKhilji	Maulana Badruddin Damishqi	He was expert in urine examination and could diagnose disease by just feeling the pulse. All the physicians of the city used to take *tibbi* lessons from him.
	Hisamuddin Marikeli	He was also well versed in science of *tibb*.
	Sadruddin Marikeli	He was the son of Hisamuddin Marikeli. He had profound knowledge of theology. He used to run his own clinic. In addition to this, he taught *tibb* also.
	Maulana Hamid Motraz	He was also an eminent physician, expert in urine examination and pulse feeling.
	AlimuddinYamini tabib	He was oculist and extremely skillful physician, and was involved in teaching and serving people in the city of Delhi.

	Mahchander	He was a noted physician and intellectual.
	Jaja	He was a surgeon (*jarrah*).
Muhammad Tughlaq	Hakeem Ziya Muhammad Masud Rashid Zangi	He was the court physician of Muhammad Tughlaq wrote *Majmu-ah-i-Diai* which is a mixture ofUnani medicine (*tibb*) and Indian medicine (Ayurveda).
	Hakeem Khwaja Shamsuddin Mustaufi	He was uncle of Hakeem Ziya Muhammad. He was also court physician of Muhammad bin Tughlaq and wrote *Majmu-ah-i-shamsi*.
	Hakeem Sheikh Ziauddin Nakhshabi	He was well-known sufi physician. He came to India from Baghdad in 1258. And settled in Badayun and died there in 1351.Some *Tutinama*, *Lazzat-al-Nisan* and *Al juziatwa al-kulliyat*.
SikandarLodhi	Mian Bhowa	He was keenly interested in medical science and on the order of SikandarLodhi wrote an Ayurvedic treatise named *Madaan-al-shifa-i-Sikandarshahi*.
	Mian Taha	He had a profound knowledge of Unanitibb as well as Ayurveda and music. He was so expert in Ayurveda that even Indian medical experts used to take Ayurvedic lessons from him.

Babur	Yusuf b. Muhammad b. Yusuf Herwi	He was a renowned physician, a prolific writer and also a good poet. His works are *Asl-al-Usl, Dalail-al-Bawl, Fawaid-al-akhiyar, Dalail-al-Nabd, Ilaj at Amrad* etc.
	Hakeem Amir Abul Baqa	He was one of the early physicians who came to Babur's court, was his close confident and was well-versed in medicine.
	Hakeem Khwaja Nizamuddin Ali Khalifa	He was also a reputed physician.
	Hakeem Muhammad Beg	He was a prominent physician during to reign of Babur and Humayun. He wrote *Dastur-ul-Fasd* and *Khawas-al-Ashiya.*
	Hakeem Muhammad b. Ashraf al-Hussayni	He was a man of great distinction and had knowledge of different disciplines besides medicine. He was chiefly interested in natural sciences. He wrote a treatise on precious stones and minerals but that's not extant now.
Humayun	Khwaja Khwand Mehmud	He migrated from Persia to India during Humayun's reign.
	Maulana Muhammad Fazl	He was famous philosopher physician at Humayun's court. He compiled an encyclopedia on twelve different subjects including medicine.

Akbar	Hakim Ayn-al-Mulk Shirazi	He was Iranian physician. He was renowned surgeon and ophthalmologist. He was also a good poet.
	Hakim-ul-Mulk Shamsuddin Gilani	He had come from Gilan. He was very learned man and an expert physician. Due to his scholarship and skill he became a good companion of Akbar and the title of Hakim al –Mulk was bestowed on him.
	Hakeem Abul Fath Gilani	He acquired a high position at Akbar's court. He wrote Persian commentary on Al-Qanun of Ibn-Sina.
	Hakeem Fathullah Gilani	He also came from Gilan and had a great knowledge of medical literature and also of astronomy.
	Hakeem Humam	He was one of the 'Nine Gems' of Akbar's court. He provided his service exclusively to the King's harem. He was friend of Akbar and had great influence on his court.
	Hakeem Ali Gilani	He was a matchless physician. He was nephew of Hakeem-ul mulk Shamsuddin Gilani. He was born and brought up in Gilan. He had good knowledge of medicine besides other sciences. He also wrote a commentary on canon of Ibn-Sina (Avicenna).

	Jalaluddin Muzaffar Ardistani	He was also descended of Gilan and came from a family who was well-versed in medical skill. He was well experienced physician and contemporary of Hakim Ali. Although he had not much learning, his practical experience was very great.
	Muzaffar b. Muhammad al-Hussayni-al-shifa	He was popularly called Hakim Shifai. He was born at Isfahan. There is a copy of his masnavi in the library of Asiatic society of Bengal.
	Hakim Amir Fathullah Shirazi.	He was son of Shukrullah Shirazi. He was born and brought up in Shiraz. He was invited by Ali Adil Shah of Bijapur. Later he left him and joined the service of Akbar who showered great honour and respect on him.
	Dawai Gilani	He was one of the 29 prominent physicians who adorned Akbar's court. He was teacher of Shahjahan.
	Hakeem Muhammad Baqar	He was born and brought up in Azarbaijan. He was and eminent physician and was the personal physician of Shah Abbas Safawi. He came to India during the days of Akbar entered into the service of Abdul Rahim Khan-i-Khanan.

	Hakim Jabrail	He was the son of Hakim Muhammad Baqar. He studied in Qazwin and Isfahan and gained a great skill in medicine.
	Hakeem Lutfullah	He was younger brother of Abul Fath Gilani. He entered the court of Akbar on recommendation of brother AbulFath. He was an expert physician.
	Hakeem Zanbil	He was uncle of Hakeem Sadra. He arrived in India from Shiraz during Akbar's reign and became his (Akbar's) close companion.
	Hakeem Misri	He was skilled both in theory and practice of medicine and was well learned in all traditional learning. He also had some knowledge of profane sciences such as exorcism, etymology etc.
	Hakeem Hasan	He was from Panipat and so called Sheikh Hasan Panipati. He was a renowned surgeon.
	Hakeem Bina	He was son of Sheikh Hasan, and was a famous surgeon like his father. He was also a specialist in eye diseases and was very skillful in treating elephants and earned a great popularity in this regard.
	Faizi	He was one of the most learned men of Akbar's court. Due to the sharpness of his

		mind, he had competent knowledge of all the sciences. He was especially skilled in philosophy and Arabic. He had mastered medicine also.
Jahangir	Hakeem Rukna Kashi	He was native of Kashan in Iran and arrived in India during the reign of Akbar but lived in the reign of Jahangir and Shahjahan. He was a distinguished physician and poet.
	Hakeem Sadra Shirazi	He was the native of Shiraz. He was son of famous physician Hakim Fakhr-al-Din-Shirazi who lived in the days of Shah Tahmasp. When prince khusrau's eyes were pierced on the order of Jahangir. With his treatment he recovered full vision in one eye.
	Hakeem Momina Shirazi	He was one of the famous court physicians of Jahangir and Shahjahan. He entered the court of Jahangir in 1622 after his arrival in India.
	Hakeem Ruhullah Gujrati	He was resident of Bharoch in Gujarat and was expert physician and excellent writer. First he was associated with Akbar, and then he entered the court of Jahangir.
	Hakeem Hasan alias Muqarrab Khan	He was the son of Sheikh Bina who was in the imperial service of Akbar. He was a physician and also well-versed in the field

		of surgery and took part along with his father in curing people. He was also an expert veterinarian.
Shahjahan	Hakeem Nizamuddin Ahmad Gilani	The *hakeem* was born in Gilan in1586. He was son of Abdullah al-Sadidi-al-Shirazi. He studied medicine and other sciences. He served Gilan for some time and then came to India and entered the service of Shahjahan.
	Hakeem Hadiq	He was son of Hakeem Humam Gilani. He was born at Fathepur Sikri during the reign of Akbar. Though he was not much skilled in medicine, many officers consulted him for providing remedies due to his name and reputation
	Hakeem Khushhal	He was son of Hakim Humam and brother of Hakeem Hadiq. When Shahjahan came to the throne he bestowed the rank of *yak hazariwa du sad sawar*on him.
	Tabiba Satti al Nisa	She was a lady physician, native of Amol, a city of province Mazandaran in Iran. She was sister of poet Talib Amoli. She was skilled in the science of medicine and well-versed in healing art.
	Hakeem Daud Taqarrub khan	He was son of Inayatullah who was pupil of Fakhr-al-Din Shirazi, father of hakim Sadra

		and personal physician of Shah Abbas Safawi. He came to India in 1644 and entered court of Shahjahan. Shahajahan used to give him great importance due to his extra-ordinary skill in medicine.
	Mish-al-Mulk Shirazi	He was expert physician. He came from Deccan to the court of Shahajahan and went to Gujarat with prince Murad. He died in Malwa.
	Hakeem Rizqullah	He was a physician under Shahjahan and a commander of 800. Aurangzeb made him Khan.
	Hakim Abul Qasim	He was entitled Hakim ul b. Mulk Shamsuddin. He was born in India and learned sciences here. He was employed under emperor Jahangir and became renowned under emperor Shahjahan and became *do hazari*.
	Shaikh Qasim	He was son of Abdul Rahim and nephew of Muqarrab Khan. He was specialized in surgery. He also knew other branches of medicine and learnt Arthematic too.
	Hakim Saleh Shirazi	He was son of Fathullah Shirazi. He came to India during the reign of Shahjahan and entered into his service. The king rewarded him many times. He also received favours

		during the reign of Aurangzeb.
Aurangzeb	Muhammad Amin Shirazi	He was one of the distinguished physicians who arrived in the court of Aurangzeb. He held prominent position and received many favours from emperor due to medical expertise and ability.
	Abdur razak Mashrab	He came from Isfahan to India during the reign of Aurangzeb. After spending a short time in Bareilly and Lucknow, he settled down in Sind where he died in1706.
	Muhammad Hashim alias Alawi Khan	He was born in Shiraz in 1670. He came to India after completion of his studies in 1700 during the reign of Aurangzeb. He had extra-ordinary skill in medicine and other sciences.
	Muhammad Hussain Khan Shirazi	He was of Arab origin but had come to be Known as Shirazi due to his long stay and settlement in Shiraz. He was an expert physician and excellent poet.
	Muhammad Akbar Arzani	He was known for his learning and skill. He was the only physician of Mughal period who rendered the Arabic treasure of Unani medicine into Persian language and thus benefitted the Persian knowing class of Unani physicians.

	Hakeem Dawood Isfahani	He studied medicine in his native place Isfahan and was considered as one of the top physicians at the court of Shah Abbas II. He came to India during the days of Aurangzeb and amassed great wealth on his return to Isfahan. He built a beautiful mosque there known by his own name.
	Hakeem Mir Muhammad Mehdi Ardistani	The Hakeem was born in Ardastan in Iran. He came to India after attaining expertise in medicine and joined the service of Aurangzeb in his court.

APPENDIX

APPENDIX

List of subjects in curriculum along with science subjects:

• Moral studies	(*aklaq*)
• Arithmetic	(*hisab*)
• Accountancy	(*siyaq*)
• **Agriculture**	**(*falahat*)**
• Mensuration	(*masahat*)
• Geometry	(*handsah*)
• Astronomy	(*nujum*)
• Philosophy	(*hikmat*)
• Physiognomy	(*ramal*)
• House-hold matters	(*tadbor-i-manzil*)
• Rules of government	(*siyasat-i-madan*)
• **Medicine**	**(*tibb*)**
• Logic	(*mantiq*)
• **Physical sciences**	**(*Ilm-i-tabi'i*)**
• Spiritual Sciences	(*Ilm-i-Ilahi*)
• History	(*tarikh*)

For Sanskrit learning students

• Vyakaran	(*Grammer*)
• Niyai Bedanta	(*Vedanta*)

CONCLUSION

Conclusion:

There were two main types of medical systems existing in India before the advent of Unani medicine. These were Ayurveda and Siddha systems. During ancient period Brahmans were having a feeling of disgust for the medical science due to certain rules of *Dharmashastras* which were against the medical practice and physicians were considered impure. It was with Unani medicine also which was also opposed by the theocratic elements in the beginning of its growth. But with course of time the perspective regarding medical science changed in India and physicians began to get a respectable position in the society in Buddhist period and leading to further developments during the period of Delhi Sultans and Mughal emperors when another system of medicine i.e Unani medical system came to India. The Unani medicine came to India with the coming of Arabs in India and it received the patronage of the ruling class. These policies of the ruling class could be seen in the form of opening of madrassas, hospitals medical libraries. Many tibbi madrassas were opened. Firoz Shah opened the first *tibbi madrassa* inside a *Deeni madrassa*. The physicians were given patronage by enrolling them as state employees and court physicians. The Sufis and travellers who came to India also contributed to spread of the methods of treatment that were practiced in their countries. Treatises on alchemy and pharmacology show the interest of Sufis in these fields. For example; *Haft-ahbab* which is an alchemical treatise attributed to famous *Suharwardi* saint Qadi Hamid al Din Nagawri and his six companions which contain various iatro-chemical prescriptions. Works on medicine are attributed to eminent Chisti saints such as Nasir al-Din Mahmud Chirag-i Dehli, Muhammad Gesudaraz and Ziya- al-Din Nahsabi. Sufis also used to train hakeems in *madrassas*. There was awareness among Indians about the developments in medical science across the world and their curiosity in this field. For example; Isami in his book *Futuhus-Salatin* makes a brief mention about Ibn Sina whose work was considered as an authorative medical work throughout the world and he writes that at the age of sixteen he had attained such a distinguished position that "physicians of the highest eminence came to read medicine with him to learn those modes of treatment which he had discovered by practice."

Besides giving patronage to Unani system, Ayurvedic system was also patronized by the ruling class in medieval India. In the hospitals both Ayurvedic and Unani Hakeems were appointed, For example; there was a hospital established by Shahjahan at Ahmadabad where where both Unani and Ayurvedic physicians were appointed for treating the poor. There was exchange of ideas between the systems in case of materia-medica and there was a fusion of the two systems also. The fusion seems to have begun in 13th century. The Persian translation of Alberuni's work *Kitab al Saidana* (a treatise on medicine) done under the patronage of Sultan Iltutmish throws light on it. The translator Abu Bakr bin Ali al-Kasani (an immigrant from Central Asia) did not simply translate the Arabic terms into Persian but also added fresh material regarding location and particulars of certain materials which are not found in the original Arabic text. He added Hindi equivalents while referring to Kashmiri fruits particularly apples. Thus pointing to the interaction between the experts of indigenous system and foreigners who settled in India. Unani pharmacology was very much influenced by Indian sources from the very beginning. As India was rich in plant and mineral sources, Unani physicians gradually increased their knowledge and used Indian drugs by borrowing from Ayurvedic sources and undertook their own research and as a result of their experiments enriched their own system of medicine with numerous drugs. Likewise a number of drugs like *aphim* (opium), *gwarpatha* (aloe-vera), *kesara madhakarni* (khurasani ajwain), *mastagi* and several others used in Unani medicine were introduced into Ayurvedic materia-medica. Also Indian medical system borrowed the knowledge of metallic acids and many processes of iatro-chemistry from them. Translations of the medical treatises were also carried out under the state patronage which was also responsible for the cultural exchange. For example; Dastur *al Hunud*, was a translation of Sanskrit text *Madana Vinoda* of Raja Madan Pal, translated in 1635 by Hakim Amanullah Khan. It deals with properties and actions of simple drugs. It also describes the Ayurvedic theory of *tridosa* (*vata, pita, kapha*) which is similar to Unani *Akhlat* (humours). Many physicians having knowledge of Unani medicine had also acquired the knowledge of Indian system of medicine showing its appreciation by the Unani practitioners. For example; During Babur's reign Hakim Yusuf bin Mohammad Beg alias Yusufi who was an extraordinary genius investigated closely various branches of medicine. He collected all the available

information from Indian system of medicine regarding general principles, diseases, diagnosis, and treatment and composed medical works on the basis of his experience with Unani medicine and knowledge of Ayurveda. Thus he was one of the pioneer Persian scholars who wrote medical books integrating the two systems of medicine .He dedicated his masterpiece *Qasidah dar hifaz-i-sihhat* to Babur .Some Unani physicians became so much adept in Indian medical system that Indian practitioners came to them for learning. Foexample; MianTaha had memorized 4000 *shloks* of Indian medical science and was so expert in Indian medical system (along with Unani medical system) that Indian medical practitioners used to take lessons from him. Persian medical treatises were consulted by Indian physicians also. For example; *Tohfatul momineen,* a17th century treatise of Muhammad Momin Husaini, Tunkabani was widely consulted by Indian physicians.

A number of prominent physicians came forward which were compared with Hippocrates and Galen. Badruddin Damishqi, a prominent physician of Alauddin Khilji's reign was an unequalled physician of his time in counseling skill, pulse feeling and examination of urine. The Indian physicians of Delhi learnt *tibbi* medicine from him. He was so proficient in urine examination that if urine of different animals were intermixed, he could recognize from the smell that the sample was taken from different animals. Both Mughals and Delhi Sultans were great patrons of medical science. A number of books on medical science were written during their reign and it was also included in the school curriculum like during Muhammad Tughlaq's reign Zia Muhammad Rasheed Zangi, wrote *Majmuah Ziai* which was based on both Persian and Sanskrit texts, *Qarabadi Qadri* written by Muhammad Akbar Arzani during Akbar's reign. *Ganj-i-badaward* written by Hakim Amanullah Khan during Jahangir's reign etc. Research on medical science was encouraged. Physicians at the court not only treated the royal family but in their free time also recorded their own observations and experiments and after sizable collection presented these to their patrons in the form of written compendium. So a large number of books were compiled both by Unani physicians and Indian practitioners. For example; During Muhammad Tughlaq's reign Zia Muhammad Rasheed Zangi, wrote *Majmuah Ziai* which was based on both Persian and Sanskrit texts. Also Mian Bhowa wrote *Tibbi-i-Sikandar Shahi* during Sikandar Shah's reign. These books mostly dealt with clinical aspects. They made extensive study of the temperament and habits of people

of India, of the herbs and plants and drugs readily available. They also made experiments with the locally available sources of medicine. They carried on their studies on these herbs and drugs, their therapeutic effects, uses, modes of administration, preparation of compound medicines etc. in their books. Social status of physicians was well recognized. During Mughal period there were physicians who directly joined the service of emperor or others who joined the service of nobles. Before joining any service the physicians had to pass certain tests in order to satisfy the employer. The selection was on the basis of experience and competence. For example; during Hakeem Ali Gilani's recruitment, Akbar ordered several bottles containing the urine of sick and healthy persons, and also of certain animals to be brought before the Hakeem for detection. The Hakeem diagnosed correctly and from that time achieved great reputation and became a close associate of Akbar. In the Mughal court Irani *tabibs* formed a predominant group in ethnic terms but during Akbar's reign the situation was slightly different as there was considerable number of Indian *tabibs* also. The Hindu tabibs were mostly brahmans by caste and experts in Ayurvedic rather than Unani tibb. Among the Hindu tabibs attached to Akbar's court; Mahadev, Bhim Nath, Narayan and Sivaji are mentioned by Abul Fazl in Ain-i-Akbari. During Mughal period some physicians were holders of high mansab; For example; the physician holding highest *mansab* under Akbar was Hakeem Abul Fath. Besides professional hakims, those who were having knowledge of medicines and worked for welfare of society were also patronized by the ruling class. For example; When JahanAra got burns, she got treatment from a royal page named Arif chela who was later rewarded. Women having knowledge of curing diseases too received patronage in Mughal India. For example; Sati-al-Nisa was a female physician at Shahjahan's court. She was the personal attendant of the Mumtaz Mahal. Royal ladies were also having knowledge of medicine; For example; One day when Akbar suffered from tooth ache, Haji Begum (maternal aunt of Humayun) rubbed some medicine on his teeth and his pain was soothed. Besides giving patronage to medical science, they were great practitioners themselves. For example Firoz Shah Tughlaq was a good bone setter himself. Among Mughals Babur has given the concept of medicinal value in various products. For example; Babur describes a recent invention of curing boils by the use of pepper. He also writes about the medicinal value of rose-water as a purgative, lemon as an antidote, and

orange as stomachic. He also writes about the medicinal value of quicksilver. This shows he had interest to create medicine culture in Mughal Empire. Babur himself claims that he had employed several hakeems for the recovery of Humayun when he became ill during Babur's last days. This also shows how Babur propagated the culture of medical science. Humayun himself used to treat the wounded when he fled to Iran. Though Akbar was not as learned as Babur and Humayun, he also showed interest in medical science and himself knew the art of healing Likewise Jahangir showed great interest in medicine. He knew the fundamental principles of tibb. He was a keen observer. In Tuzuk-i-Jahangiri we find Jahangir himself taking out intestines of a hunted lion and examining the position of gall bladder in it.

People suffered from different kinds of diseases. According to a tradition in medieval India it was believed that there were 18000 diseases in all. The ablest physicians didn't know about 6000 diseases. Another six thousand diseases were known to physicians but they didn't know how to cure them , thus it was only remaining 6000 diseases which could be correctly diagnosed by physicians and appropriate medicines could be prescribed for them. Thus when proper cure was not found the people resorted to unscientific ways of healing various ailments .Some diseases which didn't even have any cure, subsided on its own. Epidemics like pestilence that devastated whole population within days occurred frequently. But in course of time different modes to subside the effects of these dreaded ailments were evolved For example; In Shahjahanama, we find that Shahjahan had ascertained the efficacy of *bezoar* stone in curing pestilence and it was corroborated by experience that many people who were on the verge of extinction from that virulent disease had regained their health by the application of this stone. Practice of surgery emerged in different forms like osteopathology, grafting, obstetric surgery etc. With these surgical procedures different anesthetic techniques were also evolved. New instruments of operation were devised. There was an instrument devised during Firoz Shah's reign which was used to find the position of child in the womb of mother. There were different methods of diagnosis and different sources of medicines like plant, animal and chemical sources to treat these diseases. For the manufacture of medicines, there was no problem of raw-material and preparing of these medicines led to economic development in terms of crop-production.

For example; besides being a part of culture, the health benefits of betel leaf were well-known and different varieties of betel leaf were grown in medieval India. Opium was highly prized as having medicinal value and was also exported to Europe as it was considered a valuable medicine there. Malwa and Banares were important centres of poppy cultivation. Later on it was cultivated in Bihar and Bengal also. Besides these medicinal value of some wild plants (local herbs) was also recognized. For example; *Balsamodendron mukul* was found in Cambay (Gujarat) and from it was produced Indian *Bdellium*. Also Manucci has written about the health benefits of *Chebulic myrobalan* which was a wild fruit that grew in Gujarat and the hills of Srinagar. It was also exported from India to Europe. Taxes were imposed on various articles which included medicine and collected in market place which further had a direct impact on growth of economy.

Besides human diseases, there was consciousness of occurrence of plant diseases and treating them was also practiced. Physicians in medieval India were expert in treating plants. They could diagnose a plant disease by just embracing its trunk For example we get a reference in *Waqiat e Mushtaqi* that how *Malikul hukama* treated a dried up plant by digging the ground around the tree and poured some molasses extracted from various vegetations in it daily and after few days the tree became green again. There was treatment of animal diseases also as is evident from the establishment of veterinary hospitals. In *Sirat-i-Firozshahi* cure of treating various animal diseases is given. Books were available for guidance in the treatment of elephants and horses, though there was no regular teaching in this subject. Shaikh Bina was one of the most skillful surgeons concerned with the treatment of elephants during that time. Various treatises were written on hippology and hippiatry due to the interest in beautiful Arab horses, which further gave stimulus to the study of veterinary science. The best medieval treatise on veterinary art was *Kitab al Nasiri* of Ibu Al-Mundhir. Different developmental stages of elephant embryo are mentioned by Jahangir in his *Tuzuk-i-Jahangiri*. Jahangir was also interested in veterinary science. He himself extracted intestines of a lion and observed how the position of gall bladder was different than other animals. There were hospitals for treating animals and birds. For example; In the account of Thevenot and Careri it is written that in Ahmadabad there was a hospital for treating sick birds and animals. They were provided with proper feed, and once they recovered were sold.

People resorted to superstitious practices as a mode of treating various ailments besides using scientific methods of treatment. There was prevalence of different myths and superstitions myths and superstitions as cause of different types of diseases like belief in evil eye, witchcraft etc. and also the adoption of irrational practices like visiting graves of Sufi saints, martyrs and *Walis*, beliefs in charms, amulets, talisman etc. in order to cure diseases certain diseases. Tombs of saints and *Pirs* were visited to offer *fatihah* (prayer) and invoke their blessing for the recovery from illness. Prince Khizr Khan visited tomb of martyrs buried at Indpat and prayed for speedy recovery of his father Sultan Alauddin Khilji. People who were childless used to visit the tomb of Pir Muinuddin Chisti to get blessings. During Medieval period in India Sufi saints used to prepare *naqsh* (amulets) and *tawidh* (talisman) and give to those who desired them. For easy and safe delivery, pregnant women wore amulets. There was widespread faith in witch craft, sorcery and magic. It was believed that serious ailments could be created through magic. Shihab, a magician of Ajodhan, was once held responsible for a protracted illness of Farid-Ganj-i-Shakar. The leaves of *bed-i-mushk* (a fragrant shrub) were thought to remove the evil effects of witch craft and sorcery. By observing *nisar utarna*, evil effects were neutralized. When emperor Mohammad Shah entered the palace after his victory at Hasanpur, the ladies of the harem received him at the gate and trays full of money were moved around his head and distributed among the poor.

There were regional variations in myths and superstitions regarding cause and cure of diseases. For example; In Punjab region there was a practice of worshipping of Goddess *Sitala* to seek protection from small pox. This practice is still prevalent in this region. Also in Punjab most of the deaths of children were ascribed primarily to the effect of evil eye or the influence of some evil spirit. Spiritual remedies were, therefore, sought before resorting to medical treatment. Bronchopneumonia was widely believed to be due to child's being possessed by some spirit of the prematorium which could be driven away only by a spell, chiefly known to the sweepers, charmers, '*Faqirs'* and '*Sadhus'*, who had a respectable place in the society. Also in the region of Himalayas, if one of the two wives of a person died and made the surviving wife ill, an image of the deceased made of stone was worshipped.

In medieval India concept of alchemy also gained importance. Various alchemists came into prominence. The ruling class was also interested in this art. The Mughal emperor Akbar himself learnt it from a yogi. Some nobles like Mian Taha during Sikandar Lodhi's time and Amanat Khan during Aurangzeb's reign were well versed in it and were also actively engaged in doing alchemical experiments. The *rasavadins* were actively engaged in their laboratories doing experiments and were well versed with the nature and properties of various metals and plant essences and thus prepared different types of medicines in the form of *bhasmas* etc. which were used as medicines and these *bhasmas* are still used in Ayurvedic and Siddha systems of medicine. Along with medicine, *Rasayana* also gave rise to the science of metallurgy. Due to the frequent experiments performed by *rasavadins* on various metals, there was growth in the science of metallurgy also. Various alchemical treatises on Rasayana were also written in medieval period.

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